Part VII – Technical Specifications

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Chapter 1 General Provisions

1.1 Introduction

1.1.1 This document (or "Technical Specifications" ("**TS"**)) sets out the requirements of the Government in relation to **one (1) steel pontoon for the Marine Department** (viz., "**Vessel**") for use by the Harbour Patrol Section ("**HPS**" or the "**user department**").

1.1.2 Unless otherwise specified in the Technical Specifications, all the specifications stated in this Part VII of the Tender Documents are classified and labelled as follows:

(a) Essential Requirements [E];

(b) Those specifications which are without any label (viz., [E] or [D] shall equally form part of the Contract like the specifications labelled as [E] ("Specifications without Label"); and

(c) Desirable Specifications [D].

1.1.3 All Essential Requirements and Specifications without Label shall form part of the Contract. For Desirable Specifications, to the extent the Contractor has committed to comply with them in its tender, they shall also form part of the Contract. As part of the tender evaluation during the tendering stage (viz. Stage 1 of the evaluation – completeness check), the Tenderer shall submit all the information sufficiently detailed to substantiate that the product and the services offered meet the Essential Requirements as stipulated in this TS (viz., specifications with [E] label) and repeated in Annex C to the Conditions of Tender, failing which its tender will not be considered further. For those Specifications without Label, where there is any proposal or evidence to show that the tender does not comply with these specifications, the Tenderer's tender will not be considered further. Commitment to comply with the Desirable Specifications will equally form part of the Contract.

1.1.4 Neither the Essential Requirements nor the Specifications without Label may be counter-proposed by the Tenderer. Any contravening counter-proposal shall be dealt with in accordance with Clause 17 of Part II – Conditions of Tender.

1.1.5 All specifications forming part of the Contract in the aforesaid manner shall be of equal materiality and importance upon the award of the Contract. The non-compliance with any specifications set out in these Technical Specifications shall have the same consequences as specified in the Contract. Save during the tendering stage in the manner as mentioned above, no differentiation shall be made based on the classification unless otherwise expressly specified.

1.1.6 The Vessel shall be Ready for Use before the Delivery Date and delivered by the Delivery Date as per the schedule stipulated under Schedule 2 – Delivery Schedule of Part V.

1.1.7 Unless otherwise expressly defined in the Contract, all technical terms and expressions used in this Part VII shall be interpreted in accordance with the professional or common usage in naval architecture, marine engineering, nautical navigation and the shipbuilding industry.

1.1.8 Where design specifications of the Vessel or any Equipment are required to be approved by the specified RO, they must be approved by the RO as well as by GNC prior to the construction of the Vessel or installation of that Equipment on the Vessel. Where design specifications of the Vessel or Equipment are not required to be approved by the RO, they must be approved by GNC prior to the construction of the Vessel and installation of the Equipment on the Vessel. This applies regardless of whether this is stated to be the case in the relevant individual provisions.

1.1.9 For the avoidance of doubt, references to "tests" throughout the Tender Documents and the Contract shall include all inspections, surveys, assessments, trials and experiments.

1.1.10 Without prejudice and in addition to the interpretation principles set out in Clause 1.2 of the Part IV – Conditions of Contract, the following interpretation principles shall apply when interpreting the Tender Documents and the Contract including this Part VII – Technical Specifications:

(a) references to "Chapter" or "Paragraph" or "Annex" refer to the chapter of or the paragraph of or the Annex to this Part;

(b) quotation marks may or may not be added for each defined term whether with or without brackets; a defined term may be identified with quotation marks and brackets, or just quotation marks, or just brackets;

(c) the use of article "the" may or may not appear before a defined term or an abbreviated term; there shall be no difference whether the term is preceded with or without the article;

(d) a defined term may have two or more versions (typically a longer version and an abbreviated version) (e.g. "Factory Acceptance Tests" or "FAT"); or may still be referred to by the original description of the subject matter based on which the term is defined; the original description, or the longer version of the defined term, or the shorter version of the defined term may be used interchangeably. For clarity sake, the original description, or the longer version may be used for more self-explanatory purpose; however, there shall be no difference;

(e) where a subject matter has been defined with two or more alternative terms of reference, any one of these terms of reference may be used interchangeably;

(f) a defined term may appear earlier than the provision in which it is defined; a term defined will have the same meaning throughout the document;

(g) there shall be no difference between a term with a hyphen and the same term without a hyphen (e.g., "sub-system" or "subsystem");

(h) titles and headings may appear in lower case or upper case throughout or only in upper case with the first word at the beginning; there shall be no difference in meaning;

(i) headings and titles do not affect the construction of the Tender Documents and the Contract;

(j) a sub-Section of this Part (at whichever sub-level and regardless of the numbering system adopted) may begin in upper or lower case and may be ended

with semi-colon or full stop; these differences do not have any interpretation significance on their own;

(k) figures may be expressed in Arabic numerals or in words; or both; there shall be no difference; three zeros in a figure may or may not be separated by any space or comma; there shall be no difference;

(l) where more than one unit of a subject matter is to be supplied as part of the Work, all requirements stated to be applicable to that subject matter shall apply to each such unit of that subject matter. This is regardless of whether the term "each of" or other cognate expression is used preceding that subject matter. This principle shall apply including without limitation where the subject matter is the Vessel and the Equipment on each Vessel.

(m) unless otherwise expressly stated where the requirement shall apply to all requirements in this TS are for the Vessel.

1.2 Statement of Purposes of the Vessel

1.2.1 The Vessel shall be designed as an essential pontoon in Habour Patrol Section at Tai Kok Tsui branch office ("TKT"). It is served for berthing of HPS patrol launches and for the embarkation and disembarkation of officers, crew and other persons to and from the patrol launches and the office of HPS at TKT. It is also served for landing of persons related to the enforcement actions against the drink and drug boating within Hong Kong waters.

1.2.2 The Vessel shall be designed and constructed for a service life of at least 30 years under reasonable maintenance.

1.3 Authorities

1.3.1 The Government New Construction Section ("GNC") of the Marine Department ("MD") is the section responsible for the procurement of the Vessel for the Government of the Hong Kong Special Administrative Region ("HKSAR") of the People's Republic of China (hereinafter referred to as the Government).

1.3.2 GNC may delegate the supervision work including plan reviewing work during the construction stage to private consultancy firms to act on behalf of the Government.

1.4 Shipyard

1.4.1 The tenderer's nominated shipyard must have the essential shipbuilding and workshop facilities such as lifting gear, hull construction and calibration equipment, machinery installation and calibration equipment and vessel launching or slipping facilities.

1.4.2 The Contractor shall employ a team of professional staff to carry out the design of the Vessel and also carry out supervision and quality control work in the course of Vessel construction.

1.5 Design and Construction Responsibility

1.5.1 It is the SOLE responsibility of the Contractor to supply a Vessel which is safe, fit and suitable for the operation of the HPS as set out in Paragraph 1.2.1 and which meets all the relevant regulations and all specifications in this Part VII, which include without limitation requirements for safety, health, environmental protection, hull form design features, structure, method and materials for construction and fitting out, stability, sub-division and operational efficiency.

1.5.2 Unless otherwise expressly specified in this Part VII, references to "RO" in this TS shall mean, in the case of the Vessel, the Recognised Organisation as specified in Schedule 9 of Part V for the Vessel. References to "RO Requirements" (in upper or lower case) shall mean, in the case of the Vessel, the requirements of the rules and regulations of the aforesaid RO as specified in Schedule 9 of Part V. References to "RO" and "RO Requirements" shall mean, in the case of the Daughter Boat, the Recognised Organisation and the rules and regulation of such Recognised Organisation as specified in Schedule 9 of Part V for the Daughter Boat. References to "IMO requirements" shall mean the latest and as amended requirements published by the IMO and available on its website and applicable to the relevant subject matter in the relevant paragraph where it is required that IMO requirement shall be complied with provided that where the IMO requirements are of any convention or resolution or other multilateral treaty of the IMO (including any amendment thereto), Hong Kong has joined in as a party to such IMO requirements.

1.5.3 The Vessel is required to be issued with a certificate of classification (without conditions) with notations by the RO as specified in Schedule 9. All plans, particulars and documentations which are required for the classification of the Vessel by the RO, in addition to those listed in Paragraph 2.3.4 to this Part shall be approved by the RO before submission to MD for endorsement and final approval prior to commencement of work. Any subsequent modifications or additions shall be treated in the same manner. Those drawings which are not required under ship classification approval shall be submitted to MD for approval before work is carried out.

1.5.4 Notwithstanding the submission of the preliminary plans and drawings by the Contractor then as part of its tender for the Contract, all plans and drawings of the Vessel except the design stresses and scantling, shall be submitted to GNC for approval before completion of the Vessel design. The design stresses and scantling including internal structural members shall be determined according to the rules of RO.

1.5.5 The Contractor shall design, build and supply the Vessel in full compliance with the requirements given in this Part VII which, to that extent, may be over and above what is normally required by any statutory and RO's rules and regulations. Should there be any contradiction between the rules and regulations of the RO and this Part VII, this Part VII shall prevail unless GNC stipulates or agrees otherwise.

1.5.6 Even if the Contractor may appoint a sub-contractor to design the Vessel with the prior written consent of the Government, the Contractor shall not be relieved of its obligations under the Contract through such appointment, and the Contractor shall be responsible for all acts, defaults and omissions of the sub-contractor as if they were its own.

1.6 Survey and Inspection

1.6.1 Tenderers shall note that the unit price per Vessel quoted in Schedule 1 – Price Schedule in Part V shall be deemed to have included the cost of surveys to be carried out by the relevant RO in respect of that Vessel (if required to be arranged by the Contractor under the Contract).

1.6.2 All electronic items and their installations shall be approved and inspected by GNC or GNC representatives as part of the Technical Acceptance.

1.6.3 Subject to Paragraph 1.6.7 of this Chapter, an advance written notice of not less than 5 working days (if the Vessel is located in Asia), and 10 working days (if the Vessel is located other than Asia) must be given to GNC before the representatives of GNC and other government officers are invited to conduct a survey visit of the Vessel. The Contractor shall be fully responsible for any delay if the Contractor fails to give adequate notice as aforesaid.

1.6.4 The Contactor shall provide:

(a) an Implementation Timetable, in the form set out in Annex 2 to this Part VII, setting out the major milestones and their scheduled completion dates and incorporating the Delivery Dates specified in Schedule 2;

(b) the Drawing Submissions Timetable in the form set out in Annex 3 to this Part VII; and

(c) the Main Items Inspection Timetable in the form set out in Annex 4 to this Part VII.

Each one of the above shall be submitted to GNC for approval upon commencement of the Contract Period.

The Delivery Date(s) for the Vessel as stated in the Implementation Timetable shall be no later than those set out in Schedule 2 of Part V. Notwithstanding anything in the Contract to the contrary, the Government may suspend payment of any of the instalment specified in Schedule 3 of Part V of the Contract if any of the timetables required herein has not been submitted for GNC's approval or GNC does not approve any of them or if the progress of work does not comply with any of them as approved by GNC.

1.6.5 A weekly work progress report with photos evidencing the progress is required to be submitted to MD during the construction of the Vessel. The weekly report shall be submitted before noon of every Monday.

1.6.6 MD may designate consultant(s) from private sector who will be authorised to represent the GNC in all technical matters including plan approval related to the construction of the Vessel. The Contractor shall cooperate with the consultant(s) and afford them unhindered access to the Vessel at all times during working hours, and shall furnish them with current copies including but not limited to all drawings, sketches, correspondence, change notices, change orders, test agendas and schedules.

1.6.7 After arriving at the site for a survey visit, if MD officer / consultant considers it is unsafe to carry out the test or inspection, the test/inspection will not be carried out. The Contractor shall arrange another additional survey visit at the Contractor's expenses. The Government shall not be responsible for any delay arising from any postponement in conducting the survey visit due to any safety issue as specified in this Paragraph.

1.6.8 Where any fee charge and associated expense are payable for the services of the RO which are necessary in order to fulfil any obligation of the Contractor under the Contract, the Contractor is responsible for paying the RO all such fees, charges and associated expenses. Such fees shall include charges for drawing approval, surveys (if deemed necessary), issue of certificates, and any other expenses payable to the RO.

1.6.9 The Contractor shall provide offices space for MD officers and consultants during their survey visits and construction progress visits to the Vessel at the shipyard where the Vessel is constructed. The office space shall include, but not be limited to, two (2) desks, four (4) chairs, one (1) telephone, one (1) conference table, drinking facilities and one (1) cupboard for

storage of documents and working clothes. The space provided by the Contractor shall also be fitted with air conditioning, have Internet access, a copying and a printer machine. Cleaning of the space shall be carried out in each working day.

1.6.10 The hours of work of MD officers or consultants will be arranged to coincide with those of the shipyard, in so far as it is practicable to do so. It is intended that all reasonable steps be taken so that the duties of the MD officers and consultants can be carried out with a maximum of efficiency and a minimum of interference with the Contractor's work.

1.7 Acceptance and Delivery

1.7.1 Acceptance of the Vessel (including all Equipment) is to be carried out in two parts:

Part 1: Technical Acceptance

Part 2: Delivery Acceptance

1.7.2 Technical Acceptance

(a) All tests trials and experiment as required in this Part VII shall be conducted as part of the Technical Acceptance including the inclining experiment as mentioned in Paragraph 2.10.3 of this Part, each acceptance test and all other inspections, tests and trials to determine whether or not the Vessel including the Equipment has been supplied in accordance with all the specifications set out in these Technical Specifications.

(b) All electronic items and their installations shall be approved and inspected by GNC as part of the Technical Acceptance.

(c) The Contractor shall supply all necessary equipment and labour at its own cost for carrying out the tests and trials stated in Paragraph 1.7.2 (a) above.

(d) If the Vessel cannot pass all of the tests comprised in the Technical Acceptance by the Delivery Date specified in the Contract, the options available to the Government are set out in Clause 12 of the Conditions of Contract and other applicable provisions of the Contract.

1.7.3 Delivery Acceptance

(a) The Vessel, after its successful completion of Technical Acceptance, shall be delivered at the Contractor's expense to the Government Dockyard.

(b) Certificate of classification (without conditions) for the Vessel with notations as specified in Schedule 9 shall be issued by the RO before the Acceptance Certificate is issued by the Government.

(c) The Delivery Acceptance of the Vessel shall be carried out by GNC in accordance with the terms stipulated in the Contract. The Delivery Acceptance is only completed when the Acceptance Certificate is issued by the Director of Marine.

(d) The Contractor must demonstrate to MD that all hull construction, outfitting, vessel stability, machinery, electrical and electronic equipment are in good working order; and must hand over the Vessel, its fixtures and Equipment to MD in good and complete condition.

(e) Not later than six weeks before the Delivery Acceptance of the Vessel, the Contractor is required to submit to GNC four copies of the Inventory List covering all items of or relating to the Vessel including all Equipment, Spare Parts, Deliverables, manuals, documentation, stores, and equipment for testing in respect of the entire Vessel. The Inventory List shall be approved by MD seven days before the day of

Delivery Acceptance and covers everything which the Contractor is required to deliver under the Contract. At the Delivery Acceptance of the Vessel, the approved Inventory List will be used to check that all the items have been delivered to MD in a satisfactory state. Details of each inventory item shall include: item name, description, type, quantity, manufacture's name and contact details, part reference number and/or serial number, and the items' locations in the Vessel.

(f) The items specified in Chapter 4.2, and all items set out in the Inventory List in the form as approved or stipulated by the Government shall be delivered to MD at the Delivery Acceptance of the Vessel. The Contractor must provide 14 days advance notice in writing for Vessel delivery when the Vessel is considered to be completed in accordance with the Contract and Ready for Use and to be delivered for the Delivery Acceptance. The Government will not accept delivery if after undergoing the tests and trials in the Technical Acceptance, the Government does not consider that the Vessel is in Ready to Use condition.

(g) On delivery, the Vessel must be in a clean, tidy and fully fitted and operational condition.

1.8 Warranty Services During the Warranty Period

1.8.1 Notwithstanding and without prejudice to the Contractor's obligation to provide the Warranty Services for the Vessel under the Conditions of Contract, the original copy of the manufacturer's warranty certificates and all related manuals and documents in respect of all the Equipment valid for 12 months from the date of Acceptance Certificate of the Vessel, shall be delivered to MD upon Delivery Acceptance.

1.8.2 The full scope of the Warranty Services is set out in Annex 1 to this Part.

1.8.3 The Contractor is responsible for arranging the Vessel for Guaranteed Slipping at the end of the 12-month Warranty Period. In addition to any defects which the Contractor may be required to fix under Clause 18 of the Part IV (Conditions of Contract), the Contractor shall also be responsible for the rectification of any defects found in the course of Guaranteed Slipping. The full scope of the Services to be provided as part of the Guaranteed Slipping is set out in Annex 1 to this Part.

1.9 Support Services

1.9.1 The Vessel must be designed for through life support and easy maintenance in Hong Kong based on an operation profile and minimum life expectancy as mentioned in this Part VII.

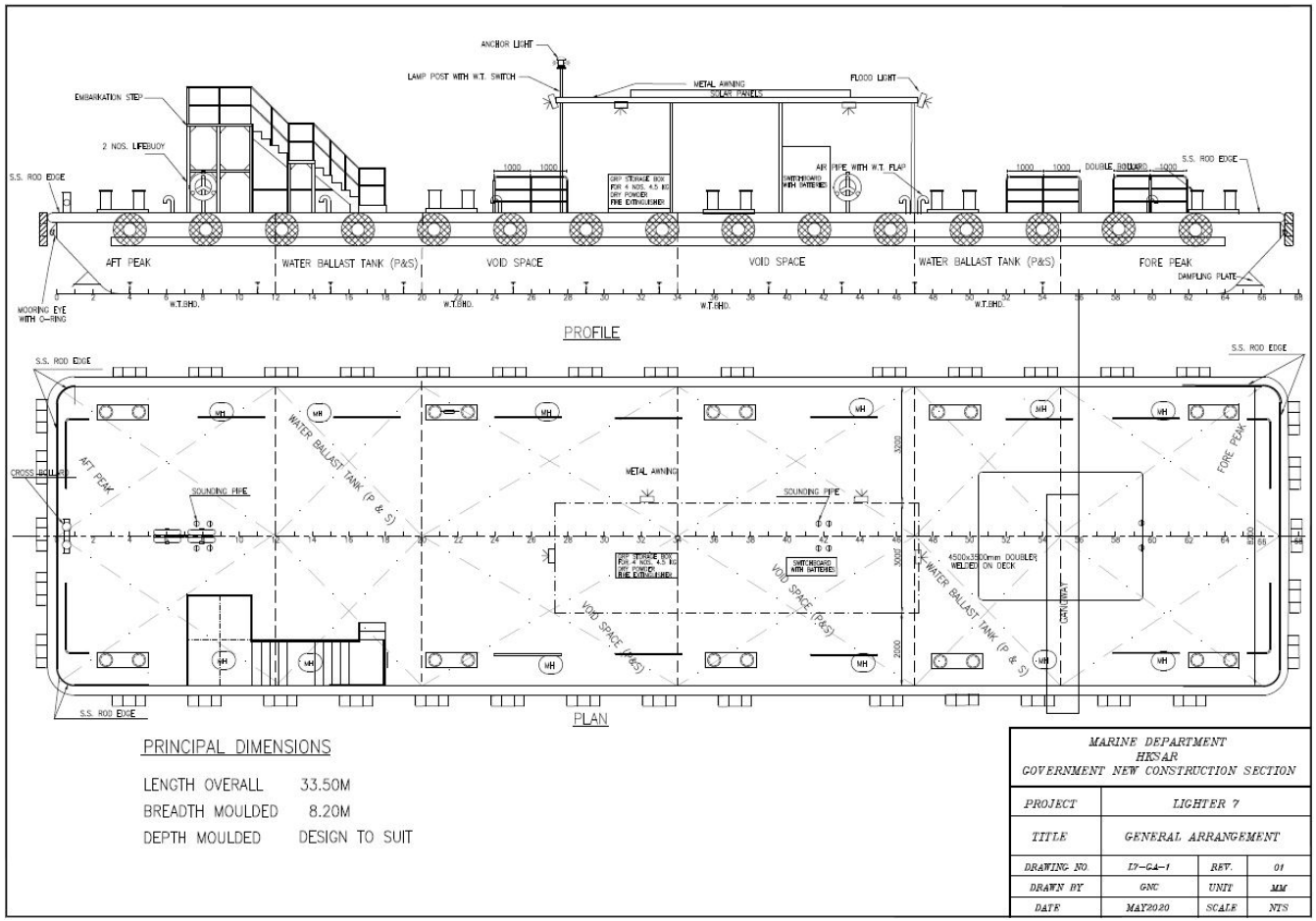
1.9.2 The above applies to all other Equipment installed in the Vessel. Support and maintenance services/agents must be available (i.e. serviceable) in Hong Kong in respect of all Equipment installed in the Vessel and return of the whole or part of the Equipment to the original place of manufacturer or supplier shall not be necessary in order to carry out any repair work.

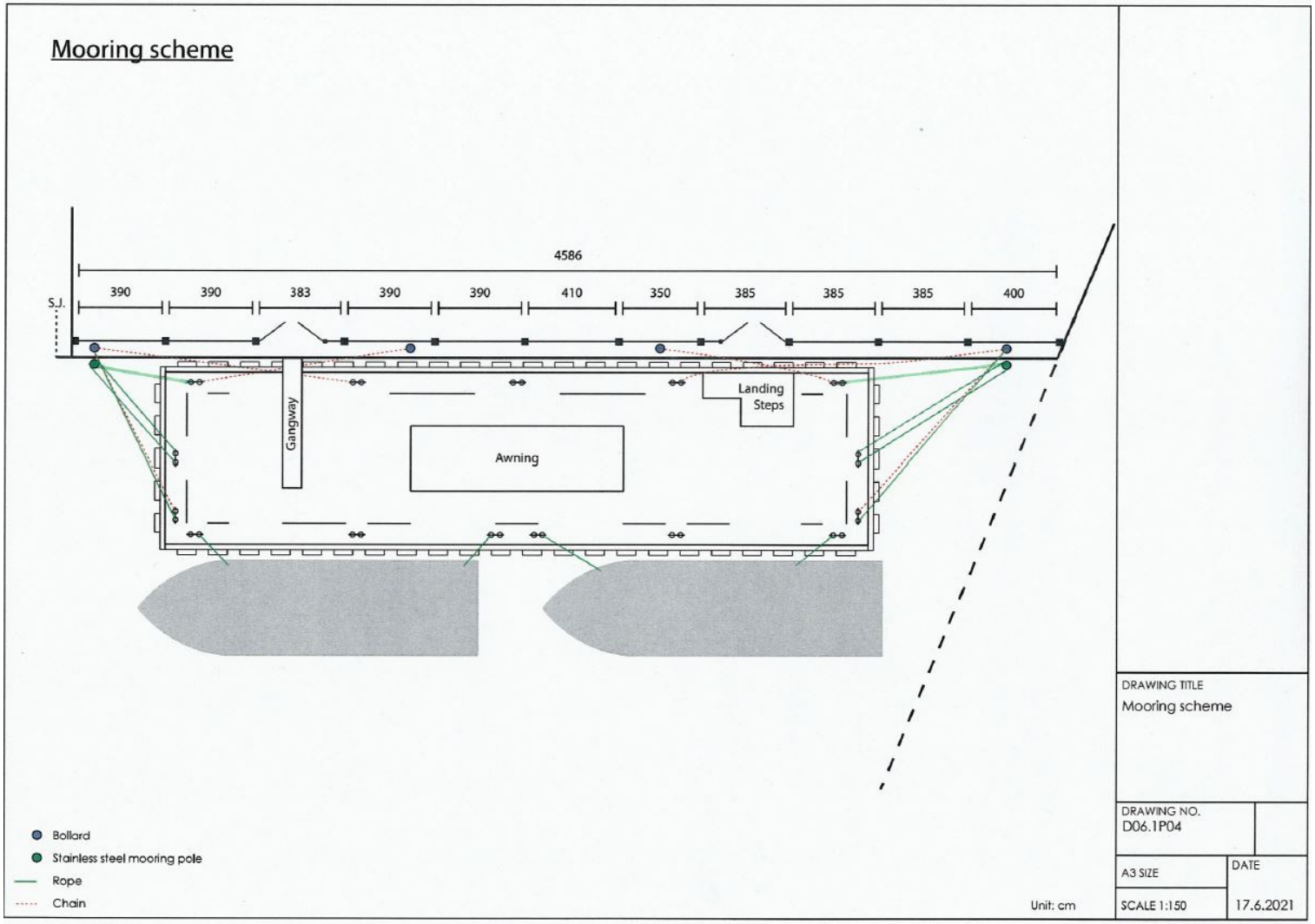
1.10 Asbestos Free

1.10.1 The Vessel must not contain any asbestos or asbestos containing materials. The Contractor must comply with the Hong Kong Air Pollution Control Ordinance (Cap. 311), Part X. The Contractor shall engage a service supplier approved by one of the ROs or other entities acceptable by MD to verify that there is no asbestos on the Vessel. An asbestos free certificate or a statement of compliance issued by the service supplier to this effect shall be provided upon delivery of the Vessel.

Chapter 2 General Technical Requirements

2.1 Conceptual General Arrangement Plan

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390
383
390
390
410
350
385
385
385
400
S.J.
Gangway
Landing Steps
Awning
Bollard
Stainless steel mooring pole
Rope
Chain
Unit: cm
DRAWING TITLE
Mooring scheme
DRAWING NO.
D06.1P04
A3 SIZE
DATE
SCALE 1:150
17.6.2021

2.2 General Provisions

2.2.1 Without prejudice to the generality of Chapter 1, this Chapter contains the more particular technical specification for the Vessel. The significance of Essential Requirements is explained in Paragraph 1.1 of Chapter 1 above.

2.2.2 The work to be done under this Contract consists of the design, construction, outfit, testing and delivery of **One (1) Steel Pontoon for the Marine Department.** Workmanship, functions, characteristics and performance shall be in accordance with this Part VII, best marine construction practices, and the regulatory standards herein specified or otherwise applicable.

2.2.3 Whilst the Contractor is required to exercise its professional expertise and knowledge to come up with an appropriate design for the Vessel which can comply with all requirements of the Contract. The Conceptual General Arrangement Plan shown above only serves as guidance and is a reference drawing to help to explain the requirements stated in this Part VII.

2.2.4 During the design and construction of the Vessel, the Contractor is required to submit a detailed General Arrangement Plan (GA Plan) for GNC approval and acceptance.

2.2.5 All the machinery, equipment and facilities, furniture, fixtures and fittings, including outfitting of the Vessel that are described in this Part VII, together with their requirements for design and installation standards that are stipulated in this Chapter and in any other parts of this Part VII, are the items that must be included in the complete "As-built" Vessel delivered to the Government.

2.3 Rules and Regulations

2.3.1 The Vessel shall be designed and constructed in accordance with the latest edition of the rules and regulations of the RO.

2.3.2 The Vessel is required to be issued with certificate of classification (without conditions) with notations by the relevant RO. All plans, particulars and documentations which are required for the classification of the Vessel, in addition to those listed in Annex 3 to this Part shall be approved by the relevant RO before submission to GNC for endorsement and final approval prior to commencement of work. Any subsequent modifications or additions shall be treated in the same manner.

2.3.3 The Contractor shall design, build and supply the Vessel in full compliance with the requirements given in this Part VII which, to that extent, may be over and above what is normally required by any statutory and RO's rules and regulations. Should there be any contradiction between the rules and regulations of the RO and this Part VII, the final decision shall rest with GNC.

2.3.4 Without prejudice to the general requirements that the Contractor shall perform all Work in full compliance with all applicable laws and regulations, and in full compliance with the requirements of the Contract including this Part VII, the construction of the Vessel must comply with the requirements of the RO specified in Schedule 9 or the requirements of any of the RO listed below (where it is expressly specified in this Part VII in relation to a particular requirement, another RO which is any one of the ROs listed in sub-Paragraphs (a) to (i) below may be designated for compliance with the relevant requirement), and also the requirements further specified in sub-Paragraphs (j) to (o) below:

(a) American Bureau of Shipping ABS

(b) Bureau Veritas BV

(c) China Classification Society CCS

(d) DNV AS DNV

(e) Korean Register of Shipping KR

(f) Lloyd's Register of Shipping LR

(g) Nippon Kaiji Kyokai NK

(h) Registro Italiano Navale RINA

(i) Russian Maritime Register of Shipping RS

and other entities as specified below:

(j) International Electrotechnical Commission (IEC) Regulations for the Electrical and Electronic Equipment.

(k) Code of Practice – Safety standards for Class I,II,III Vessels published by MD.

(l) Quality and standards of the welding shall comply with the rules of one of the ROs listed in sub-Paragraphs (a) to (i) above or American Welding Society (AWS) or other applicable international standards or rules

(m) International Regulations for Preventing Collisions at Sea 1972, as amended by International Maritime Organization (IMO) Resolution A464(XII) and A626(XV).

(n) Resolution MSC.267(85) Adoption of the International Code on Intact Stabiltiy,2008.

(o) All equipment/fittings shall be designed and manufactured to at least the standards as specified in these Technical Specifications. When none of the rules and regulations in Paragraphs 2.3.4 (j) to (n) above are applicable, then the applicable standards specified by the applicable organisations below shall be complied with:

BSI	British Standards Institute
GB	Standardization Administration of the People's Republic of China
IEEE	Institute of Electrical and Electronic Engineers
ISO	International Organization for Standardization
JIS	Japanese Industrial Standards

In the event of any inconsistency amongst the above requirements, rules and standards, those mentioned in sub-Paragraphs (j) to (o) shall prevail over the requirements of the relevant RO as listed in sub-Paragraphs (a) to (i) above.

2.4 Principal Dimensions

2.4.1 The Principal Dimensions of the Vessel shall be:

Hull Profile:	Mono-Hull	[E]
Length Overall ("LOA"):	32.5-33.5 metres (both figures included)	[E]
Maximum Breadth:	7.8 – 8.2 metres (both figures included)	[E]
Depth:	Design to suit	
Freeboard:	About 1.4 metres	[E]
Extreme Draught:	Not more than 1.7 metres	[E]
Special Facilities:	A landing platform with steps and a fixed awning	[E]

"Length Overall" ("LOA") means the distance between the foreside of the foremost fixed permanent structure (included fender) and the aftside of the aftermost fixed permanent structure of the Vessel, included waterjet propulsion system and out-fittings. The Tenderer shall indicate the length overall of the Vessel in Dimension scale in General Arrangement Plan submitted according to Schedule 7 of Part V.

2.5 Material of the Construction

2.5.1 Material of Hull structure: marine grade mild steel [E]

2.6 Vessel Operating Profile and Environment

2.6.1 The Vessel shall be designed for deployment on 365 days per year as an essential pontoon in HPS at TKT branch office. It is served for berthing of HPS patrol launches and for the embarkation and disembarkation of officers, crew and other persons to and from the patrol launches and the office of HPS at TKT. It is also served for landing of persons related to the enforcement actions against the drink and drug boating within Hong Kong waters. Overnight use by HPS of the Marine Department is required and the Vessel shall be designed and built to have lightings for operation at night.

Summary of Operational Hours / Range

Number of hours/day :	24 hours/day	
Number of days/year :	365 days/year	
Endurance for light:	Not less than 36 hours when battery fully charged	[E]

2.6.2 The Vessel shall be able to operate safely within the Hong Kong waters in weather conditions up to and including the conditions equivalent to Beaufort wind force scale ("Beaufort scale") number **3**, Sea State **3 and wave height 1.0 meter** set out in Annex 7 to this Part.

2.6.3 Total maximum carrying capacity of the Vessel is 22 persons [E]

2.6.4 Ambient Conditions - All machinery, equipment, systems shall still be capable of operating at their full design performance under the following environmental conditions:

External air:	+ 40 ºC	
Switchboard Internal space:	≤45 ºC	(All equipment at full rated power)
Maximum seawater temperature:	+ 30 ºC	

2.7 Arrangement of Main Deck

2.7.1 The Conceptual General Arrangement Plan in Paragraph 2.1 above gives a conceptual layout of the desirable deckhouse and compartments arrangement on main deck and under-deck of the Vessel for reference. The Contractor is required to submit its own design in details for MD's approval.

The main deck consists of.

(a) Awning.

(b) Gangway

(c) Foundation of the Gangway which secure on shore

2.7.2 Hand rails and grab rails shall be provided with to secure the person in position safely while the Vessel is berthing.

2.7.3 The doubler for the gangway base rollers and the landing platform with steps shall be aligned to suit the location of shore entrances to the steel pontoon.

2.7.4 All the steps and walking area shall be provided with anti-slip coating or anti-slip measurement.

2.8 Markings and Colour Scheme

2.8.1 Markings and colour scheme for the Vessel shall be provided by the Contractor. Colour scheme shall be approved to GNC before application. All painting colour scheme for fittings shall be agreed by GNC.

2.8.2 All labelling shall be both in Chinese and English and as per applicable rules and regulations. The user department logo shall also be displayed on both sides of the deckhouse or elsewhere as directed by MD officers.

2.8.3 The Vessel's name shall be permanently marked on both sides of the bow and the transom centre to MD and user department's satisfaction. Draught marks at bow & stern and Plimsoll Disc shall also be marked at both sides of the vessel in the same manner as the vessel name. Vessel's identification shall be marked as large as possible at the deckhouse top for helicopter viewing.

2.8.4 All labelling, stencilling and marking (not limited to the hull but including all aspects of the Vessel) shall be made on separate plaques, boards or labels attached to the structure. By default, all displays, control actuators, electric switches, valves, and other equipment shall be labelled to indicate their type and function as appropriate.

2.8.5 Exits shall be identified and labelled. Stowage locations for life jackets and quantities of life jackets contained therein shall be identified.

2.8.6 Safety markings for the prevention of person tripping in the Vessel shall be provided where necessary.

2.9 Tally Plates

2.9.1 The following information shall be displayed on the builder's plate.

(a) Builder's name;

(b) Vessel's name;

(c) Year of build;

(d) Vessel Dimension (length overall x width x depth); and

(e) Maximum number of persons including the crew that the Vessel is designed to carry.

2.9.2 Tally plates in both English and Chinese characters shall be fitted for all spaces and all equipment as required by MD including but not limited to:

(a) Air vents;

(b) Control panels, switchboards, distribution boxes and electrical circuits;

(c) Any other equipment/fitting as required.

2.9.3 Information engraved on the tally plates shall include: service, function, mode of operation, source of power, fuse rating, voltage and warning and other information as required by MD.

2.9.4 Tally plates exposed to weather shall be made of durable and weatherproof material and be securely fastened.

2.9.5 List of tally plates shall be provided as directed by MD.

2.10 Stability

2.10.1 The Tenderer shall before the Tender Closing Date submit with its tender a Vessel proposal engineering and stability package that clearly defines the Vessel's performance, structural and operational capabilities. This package shall contain:

(a) The preliminary lines plan of the proposed Vessel and the preliminary stability information and calculation with the lines drawing, hydrostatic curves, cross curves of stability, shall be submitted with the tender by the Tender Closing Date. All calculations and drawings must be in metric units.

(b) Weight and Centre of Gravity prediction calculations with breakdown for the Vessel.

(c) Construction plan - midship, awning, profile and deck, bulkhead of the Vessel.

(d) A preliminary estimate of the fore and aft draught and the position of the centre of gravity (longitudinal, transverse and vertical) of the proposed design for the Vessel in its lightship, and full loaded conditions, noting the importance of the Vessel remaining trim and heel free during operation.

The calculations shall be carried out by using a proven computer system, with evidence (viz. recognised by a government authority or a RO). The Contractor shall further

develop and refine the above package upon commencement of the Contract and seek the written approval of the Government of such revised package.

2.10.2 A final stability assessment of the loading condition using final lightship data shall be delivered to MD prior to the delivery.

2.10.3 Inclining Experiment

(a) An inclining experiment shall be carried out, with the attendance of MD officer(s) and/or appointed consultant, according to the guidance from Chapter 8 and Annex I of IMO Resolution MSC.267(85) in conducting such an inclining experiment, to determine the lightship weight and the position of the centre of gravity of the Vessel.

(b) At least 7 working days in advance of the inclining experiment, the "Scheme of Inclining Experiment" ("Scheme") shall be approved by the RO and submit to GNC for reference. The Scheme shall include:

(i) the Vessels' intended condition during the inclining experiment with intact stability results, including surplus and missing weights, and their centre of gravity;

(ii) the proposed locations and movements of inclining weights;

(iii) the calculation of estimated metacentric height, heel and trim of the Vessel before and during the inclining experiment;

(iv) the proposed number, location and lengths of pendulum used or other methods of measuring heel angles;

(v) hydrostatic table, and tank capacity tables; and

(vi) the list of data to be measured (i.e. draughts, specific gravity of floating water).

(c) The inclining experiment shall only be conducted:

(i) after the "Scheme of Inclining Experiment" has been approved by the RO surveyors and the MD officers; and

(ii) in the presence of RO surveyors and MD officer(s) and/or appointed consultant.

The lightship weight and centres of gravity shall be calculated and presented in the inclining experiment report. The metacentric height of the Vessel after each and every shift of inclining weight shall be preliminarily determined. Free surface effects of all liquids on board shall be taken into account in all calculations.

(d) The inclining experiment report shall be produced and has obtained the RO's approval before submitting to MD for further comments. The report shall include a statement from the Contractor stating that the Vessel is safe to go to sea for the intended tests and trials specified in the Contract. The Vessel must not carry any operational limitations with respect to its stability capability within the operational requirements stipulated in this Part VII.

2.10.4 Stability Information Booklet

(a) The Contractor shall supply to MD four (4) copies of the Stability Information Booklet (as built) at no extra cost. Stability Information Booklet shall be approved by the RO before submitting to MD for comments. The Stability Information Booklet must be given to MD at the time of Delivery Acceptance.

(b) The Vessel shall comply with the stability criteria mentioned in this Part or other applicable IMO regulations (International Code on Intact Stability, 2008). Furthermore, stability due to wind and ship rolling for the required service environment of the Vessel shall be calculated. In addition to the requirements stated above, the booklet in its final version shall include:

(i) a general description of the ship including vessel's name, principal dimensions, fully loaded displacement;

(ii) instructions on the use of the booklet;

(iii) general arrangement showing names of all compartments, tanks, machinery spaces, storerooms, crew and passenger accommodation spaces;

(iv) hydrostatic curves or tables and cross curves of stability calculated on a free-trimming basis, for the ranges of displacement and trim anticipated in normal operating conditions;

(v) capacity plan or tables showing capacities, VCG and LCG for each of all ballast tanks.

(vi) tank sounding tables showing the capacities, centres of gravity, and free surface data for each tank;

(vii) the effect on stability of free surface in each tank in which liquids may be carried;

(viii) the estimated total weight of (i) passengers and their effects and (ii) crew and their effects, and the VCG and LCG of each such total weight. In assessing such centres of gravity passengers and crew shall be assumed to be distributed about the ship in the spaces they will normally occupy, including the highest decks to which either or both have access.

(ix) the estimated weight and the disposition and centre of gravity of deck cargo;

(x) information on loading restrictions, such as maximum KG or minimum GM curve or table that can be used to determine compliance with the applicable stability criterial. Calculation including of loading and righting levers (GZ) curves of -

(a) Light condition;

(b) Full load (to the assigned freeboard) condition.

(c) In the preliminary stability information booklet and in the final stability calculations, the estimated and the final (obtained after conducting an inclining experiment) lightship data shall be used respectively. Both the preliminary and final Stability Information Booklet shall include the following loading conditions (and any other conditions as may be required by MD during the construction of the Vessel) and their stability results shall be presented as per on Intact Stability mentioned in 2.10.5.

Loading Conditions		Ballast Tank(%)	Persons & Effects
1	Lightship	0%	0 Kg
2	10% ballast with 0 person	10%	0 Kg
3	10% ballast with 22 person	10%	1870kg (22person)
4	50% ballast with 0 person	50%	0 Kg
5	50% ballast with 22 person	50%	1870kg (22person)
6	Full Load	100%	1870kg (22person)
7	Most worst loading scenario	Proposed by shipbuilder	Proposed by shipbuilder

(i) The weight of each person shall be assumed to be 75 kg, and effects per person to be 10 kg.

(ii) The VCG of each person shall be assumed to be 300 mm above the seat when seated, and 1000 mm above the deck when standing. The seated or standing position, and LCG of each person, shall be in their most likely position on board.

(iii) The maximum free surface moments shall be used for calculating the stability of the Vessel in all the above conditions.

(iv) Wind moments in various loading conditions on sea state 3 shall also be considered in the stability calculations.

2.10.5 Intact Stability Criteria

Stability and freeboard will be considered satisfactory if the following criteria are complied with, IMO Resolution MSC.267(85), Chapter 2, Recommended Design criteria for certain type of ships. [E]

(a) the area under the righting lever curve up to the angle of maximum righting lever is to be not less than 0.08 m-rad;

(b) the static angle of heel due to a uniformly distributed wind load of 0.54 kPa (wind speed 30 m/s) may not exceed a heeling angle corresponding to half the

freeboard for the relevant loading condition, where the lever of wind heeling moment is measured from the centroid of the windage area to half the draught;

(c) the minimum range of stability should be 20°; and

(d) a simple inclining experiment for the steel pontoon may be carried out for approval in the present of surveyor. The simple inclining experiment requires that the angle of heel should not be greater than 7° and the deck edge should not be immersed, when the passengers distributed on the platform with 2/3 of the passengers standing on one side of the platform and 1/3 on the other side. The simple inclining experiment can be replaced by an acceptable naval architecture calculation.

2.11 Other Design Features

2.11.1 Berthing requirement of the Vessel shall match with the designated point of berth at HPS at TKT branch office according to the mooring scheme.

2.11.2 Permanent list is not allowed, and where it is not practical to achieve this requirement, the maximum permanent list of the Vessel in its lightship condition must not be greater than 0.5 degree.

2.11.3 Permanent ballasts can only be used as agreed by GNC. The contractor should note that it shall be under a very exceptional case that GNC would agree for the Vessel to have ballast installed.

Chapter 3 Technical Requirements – Hull, Fittings and Equipment

3.1 General Provisions

3.1.1 The strength of the hull structure shall be calculated and meet all requirements given in this specification including requirements of safety, hull design features, structure, method and materials for construction, fitting out and stability. Vessel designed with a mono-hull form and the hull structure shall be constructed in Mild Steel.

3.1.2 The Vessel's design stresses and load (wave height versus speed), maximum acceleration considered and scantlings calculation including internal structural members shall be designed according to the rules as stipulated in Paragraph 2.3.4 of this Part VII. It shall be capable of withstanding stress coming from wave impact and operation environment conditions.

3.1.3 Any openings in hull and deck shall comply with the applicable RO's rules for watertight integrity if not otherwise specified by MD at or prior to the kick-off meeting.

3.1.4 Hull construction materials shall be new and of a type which has been certified by the RO or other entities acceptable to GNC for shipbuilding purposes.

3.1.5 All material and build processes for Mild Steel shall comply with an approved standard. This shall recognise the vessel through life cycle and service conditions for ease of repair in the event of hull damage.

3.1.6 Records of the structural materials used for vessel construction and up-to-date copies shall be provided to RO surveyor and GNC's site representative for inspection during the construction stage of the Vessel. Materials for composite structures construction shall be traceable to ensure quality, and follow good materials handling procedures, for example: workshop conditions, material storage and handling, and requirements for the manufacturing of the craft.

3.1.7 Major penetrations or access openings through the transverse hull bulkheads below the main weather deck level shall be avoided as far as possible. Cable penetrations shall be located as high and as far inboard as possible. Any and all penetrations through bulkheads below the main deck shall be fitted with RO approved devices and be so arranged to ensure the bulkhead to be entirely watertight and strength maintained.

3.1.8 Awning located above the main deck shall, in their outside boundaries, shall be of sufficient strength and be of a design to maintain in good condition in all operational conditions, in particular, during passage of typhoon.

3.1.9 Close attention shall be paid to the fabrication and installation of machinery foundations to insure rigidity of the foundations and their structural continuity with adjacent structure.

3.1.10 Strength shall be maintained by ensuring hull structural continuity of main members including bottom and deck girders and transverse web frames. Where the strength of a main structural member is impaired by cuts or interruptions in continuity, efficient means of compensation shall be fitted. Special care shall be given to reinforcing the hull in way of the fenders and areas likely to experience slamming.

3.1.11 The keel structure shall be arranged to accommodate Vessel's dry docking and lifting requirements in the Government Dockyard in Hong Kong

3.1.12 All welding and fabrication shall be carried out according to the rules of a RO to be appointed to overseeing the construction work for example, "Part 2 -Rules for Materials and Welding of Steel Vessels under 90 Meters in Length of American Bureau of Shipping" or American Welding Society (AWS) or other international standards acceptable to MD. Welding scheme shall be approved by the RO before work is carried out.

3.1.13 Welded joints shall be carefully designed and constructed to conform to the latest established standards to prevent fatigue failure. Cutting for edge preparation shall be performed by qualified person to achieve correct angle, shape and smooth finish of the edges. Only qualified welders shall perform the welding work.

3.1.14 Certification of the qualifications of each individual welder and inspector shall be submitted to GNC by the Contractor. Welds carried out by unqualified procedures or welding performed by non-certified welders shall be removed by the Contractor at his own expense. The structural fabrication shall include but not be limited to the following:

(a) Inventory of incoming material, consumables components and machinery;

(b) Traceability procedures for materials together with traceability identification codes which shall be serial and indexed to the controlled manufacturing procedures;

(c) Lofting, cutting, fitting, welding, forming and dimensions of structural components, measures shall be taken to avoid deformation of structure during fabrication and welding;

(d) Welding and inspection procedures identifying clearly the type and extent of Non-Destructive Test (NDT) inspection carried out on the Vessel structure as per relevant RO Rule. GNC may extend the NDT deemed to be necessary subject to the quality of the welding. The Contractor shall submit a NDT inspection plan to GNC for approval before inspection. NDT shall be carried out by an agent approved by the national authority or RO and the agent shall submit an inspection report to GNC via the Contractor on their findings;

(e) Welding, machining, measuring and inspection equipment maintenance and calibration;

(f) Machining, finish surfaces, bolting;

(g) Procedures for work quality non-conformance reporting and records of rectification of defects;

(h) The design and manufacturing drawing control procedures, including any of its revisions and updates, and records for any re-issue of drawings.

3.2 Hull Design Features

3.2.1 The hull form of the pontoon is basically box shape with a rake at both ends.

(a) All materials used in the construction shall be agreed by GNC prior to construction.

(b) The keel structure shall be arranged to accommodate vessel's dry docking and lifting requirements in the Government Dockyard in Hong Kong.

(c) Main Deck to be cambered and camber height around 150mm

3.2.2 The pontoon consists of twelve (12) watertight bulkhead compartments as follows:

(a) Port fore peak tank;

(b) Starboard fore peak tank;

(c) Port aft peak tank;

(d) Starboard aft peak tank;

(e) Four water ballast tanks;

(f) Four centre void spaces.

3.2.3 Tightness

(a) Tanks shall be tested by pressurizing to the equivalent of a head of water from the tank bottom to one metre above the top of the vent loop subject to RO requirements. If pressurized by air, all fittings and welding shall be checked by application of a soap solution. No leakage is permitted. During testing, tanks shall hold their pressure without leakage for six hours;

(b) The weather-tightness of any fittings on the weather deck and deckhouse shall be demonstrated by directing a water stream from a 12 mm diameter nozzle at all parts of the exterior including all windows, doors, and hatches. The nozzle shall be 1.5 metres or less from the fitting being tested, and the water pressure at the nozzle shall be at least 4 bar. Any leakage will be considered to be a failure of the test and corrective measures shall be taken;

(c) Chalk tests to be carried out if the above two methods are not applicable;

(d) All structures and fittings shall withstand the tests described above, without deflection greater than 10 mm per metre of span or any permanent set. Any weakness shall be rectified at the expense by the Contractor.

3.2.4 The lowest freeboard should be about 1.4m for easy embarkation and disembarkation.

3.2.5 The general arrangement plan could enhance the effective operation of the pontoon for assigned mission.

3.3 Hull Structure

3.3.1 The Pontoon is to be longitudinally framed thoroughly but with transverse side frames in peak spaces. Structural details should follow the technical information

(a) General Arrangement.

3.3.2 Limber holes of not less than 65mm radius are to be provided in floors, transverse and bottom girders as appropriate, to ensure complete drainage of liquids inside the pontoon to be pumped off.

3.3.3 A steel doubler should be fitted on the main deck at ship front under the gangway base rollers as per General Arrangement Drawing provided by GNC.

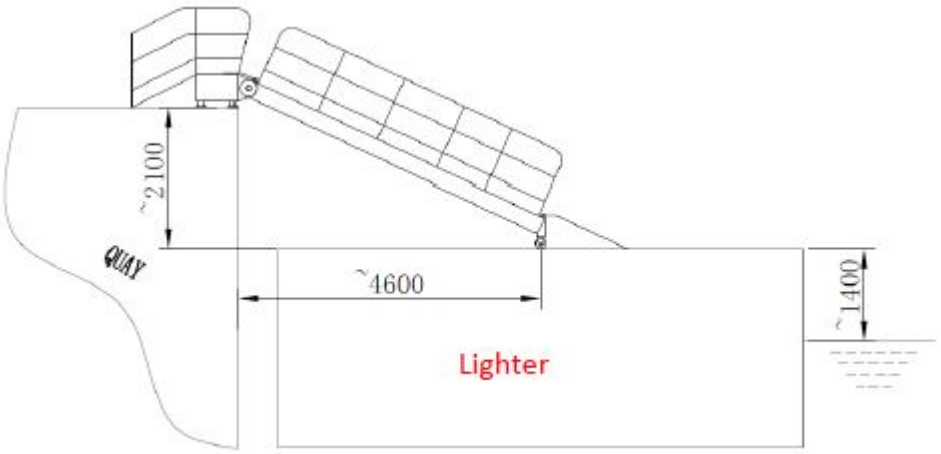
(a) 4500 x 4500 x 10mm.

3.3.4 A steel embarkation ladder platform of height 2.5m should be fitted at the starboard side aft of the pontoon for second means of embarkation method. Detail as per drawing provided by GNC.

3.3.5 Berthing requirement of the pontoon should match with the designated point of berth.

3.3.6 The hull and deck are easy to maintain and repair. Two steel poles around 2 metres height with eye ring should be fitted at side of Gangway for stopper function

3.3.7 An Aluminium Gangway around 1-meter width will be installed to connect the shore side and the pontoon. The design and fabrication cost of the Gangway and Gangway foundation structure on berth, installation cost by Hong Kong local contractor will be covered by the Tenderer. The design of the Gangway should be reviewed and approved by GNC and Class to confirm the strength. The gangway should be able to adapt to the fluctuation of the tide. Sample of the gangway is shown in the following photograph:



3.3.8 The tanks and compartments are easy to maintain and repair.

(a) The Vessel shall be painted externally with a paint process which can be guaranteed for a minimum of two years' service life by the paint manufacturer. Paint shall be used on surfaces as directed by GNC.

(b) Painting scheme shall be proposed by the Contractor in consultation with the paint suppliers/manufacturers and submitted for GNC agreement and approval.

(c) All materials used for painting of the Vessel internally and externally shall be agreed by GNC and shall not have adverse effects to the environment and the health of persons onboard.

(d) Painting report for the complete Vessel on delivery and after warranty slipping shall be prepared by the paint supplier and submitted to GNC.

3.4 Welding

3.4.1 All weld joints are to be inspected by RO/GNC officers; and the contractor is to be responsible for the non- destructive testing of weld joints, as required by and to the satisfaction of RO/GNC.

3.4.2 Welding scheme covering all weld joints of the pontoon should be provided by GNC prior to the commencement of any construction work.

3.5 Awning

3.5.1 A permanent awning (size 10m x 3m) should be installed for shelter from heavy raining. The clear head room is about 3-meter height. Material of awning to be matte metal of stainless steel, anti- rust and corrosion resistant. Two flood lights shall be provided including one forward and one afterward with one power switch, and another two flood lights shall be installed one side of the awning with another one power switch, pointing to the deck. The angle of these 4 flood lights should be adjustable. The colour temperature of these lights is recommended to set as amber. There should be sufficient lighting installed underneath the metal awning for the illumination of the deck area.

3.5.2 The awning on weather deck is to be of single skin construction.

3.5.3 The awning is to be secured on stainless steel frame work by means of the stainless steel bolts and nuts, and the joints of metal Panels should be suitably reinforced and insulated. All the supporting steel pillars are to be of tubular shape.

3.5.4 It is desirable that matte metal of awning frame is SS 316 or SS 304 stainless steel, anti- rust and corrosion resistant. [D]

3.5.5 The camber height of the awning is 150mm. Gutter ways on port and starboard sides of the awning and four individual metal scupper pipes leading to the weather deck edges are to be provided for awning drainage.

3.5.6 Preventive measure should be provided for the connections between main deck and awning for galvanic corrosion. Details are to be provided and approved by GNC.

3.5.7 Fixed Ladder to be provided for access the awning top for maintenance.

3.6 Fenders

3.6.1 As shown on the General Arrangement Plan, two rows of “D” shape proprietary make rubber fenders of 250mm thick are to be fitted together with rubber tires at each side of the pontoon. [E]

3.6.2 Rubber tires of about 1.2-meter diameter, 300mm width for the STBD side and 1.2-meter diameter, 250 mm width for port side should be secured at both side of the pontoon to be performed as bumping buffers. Two drainage holes on the lowest point for each new tire fender should be drilled. [E]

3.6.3 Details are shown on the “General Arrangement Plan” provide by GNC.

3.6.4 Sixty (60) lashing eyes in 25mm thick steel plate are to be equally distributed on both sides of main deck and side shell for securing rubber tires as additional fenders. [E]

3.7 Deck Covering

3.7.1 Open deck spaces, embarking steps and platform surfaces should be self-draining and covered with hard wearing non-slip epoxy paint.

3.7.2 The colour of all deck coverings shall be assigned by GNC

3.8 Paint

3.8.1 The Contractor shall propose a suitable paint specification in conjunction with a preferred paint manufacturer for GNC’s approval.

3.8.2 Volatile Organic Compounds ("VOC") content limits of the paints shall comply with the Controls and Requirements of the VOC Regulation (VOC content limits for regulated vessel paints and regulated pleasure craft paints) of the Regulation of Hong Kong Air Pollution Control Ordinance.

3.8.3 Painting scheme shall be submitted for MD's approval before commencement of work. The proposal shall contain a list and the detailed specification of the paint intended to be used. Thickness of each coating shall be specified.

3.8.4 All painting work shall carry a two-year guarantee provided by the Contractor against defects in material and workmanship. The Contractor shall provide MD at Delivery Acceptance a letter of certification from the paint manufacturer to certify the application of the paint is under the paint manufacturer's quality control and in accordance with the manufacturer's requirements including but not limited to the surface preparation, control of the temperature of the surfaces, atmospheric conditions, paint thickness, and method of application.

3.8.5 A Tributyltin (TBT) free fouling-release/anti-fouling paint complies with actual operating profiles of this working vessel shall be applied on the areas below the water line to provide at least two years' protection against the marine growth.

3.8.6 A TBT free certificate issued by the paint manufacturer shall be submitted before the Delivery Acceptance. The fluoropolymer foul release coating/antifouling paint (e.g. Intersleek 1100SR or equivalent) shall comply with the International Convention on the Control of Harmful Anti-Fouling Systems on Ships as adopted by the IMO.

3.8.7 All deck areas shall be covered with hard wearing and anti-slip epoxy paint.

3.8.8 A painting report shall be submitted to MD upon completion of work.

3.8.9 Surfaces that require painting shall be fully prepared to meet with paint maker's requirement prior to painting.

3.8.10 All fastening preparation and other penetrations shall be completed before painting of any surface.

3.8.11 Colour scheme is outlined below and the colour codes of finished coats are to be submitted for GNC approval well before painting

(a)	Hull below designed waterline	Red
(b)	Hull above designed waterline	Grey
(c)	Deck, deck fittings and railing	Grey
(d)	Hull internal	Red
(e)	Pontoon name and draught mark	White
(f)	Awning frame	Grey
(g)	Awning top/bottom	Grey
(h)	Embarking platform/Framework	Grey/Yellow
(i)	Fire-fighting storage box	Red
(j)	Indicating board/wording	Yellow/ Black

3.9 Cathodic Protection

3.9.1 A permanent system of self-energised cathodic protection suitable for a minimum of three-year life should be fitted comprising a number of anodes secured to the hull below the water line at the appropriate locations.

3.9.2 The actual number, size and positions of anodes and method of securing shall strictly follow the instruction required by the proposed anode manufacturer.

3.10 Mooring Equipment

3.10.1 Six nylon ropes and Six chain assembly sets and other fittings are to be provided for mooring purposes, the diameter, length and specification should be design fit proposed by the Tenderer. The final specification should be approved by GNC.

3.11 Manholes and vertical Ladders

3.11.1 At least twelve watertight manholes with covers are to be arranged on both sides of the deck as shown on the "General Arrangement" plan for the twelve below-decked compartments. The steel coverers are to be secured with stainless steel studs and nuts. All manholes shall comply with the requirements of RO.

3.11.2 Fixed steel vertical ladders of adequate length, with non-slip rungs, are to be provided for each manhole leading to below-decked compartments.

3.12 Vent Pipes for Ballast Tanks and Void Tanks

3.12.1 A 150 mm diameter vent pipe is to be fitted on each compartment (To be well separated from the manhole).

3.12.2 The coaming height of the vent pipes is not to be less than 380mm, and should be capable of self-closing function.

3.13 Sounding Pipes for Ballast Tanks and Void Tanks

3.13.1 Individual sounding pipe of 50mm diameter for each compartment is to be provided and fitted with striking plate. Flush deck type of 50mm diameter with screw caps should be provided for all sounding pipes.

3.14 Bollards

3.14.1 Ten (10) sets of double bollards of around 300mm diameter are to be fitted as shown on the "Berth Mooring Plan" which will be provided by GNC. Bollards are to be of mild steel with stainless steel sheathing and fitted with circular prevention caps. The bollards shall be positioned as closer to the side of the steel pontoon as possible. The bollard drawing, strength calculation and mooring rope calculation to be submitted to GNC for approval.

3.15 Handrails and Stanchions

3.15.1 Tubular handrails are to be arranged on the main deck around the outer limit of the pontoon, particularly in front of the end of the gangway. The handrails are to be formed by 50mm diameter galvanised steel pipes with stanchions spaced not more than 1.5 meter. Handrails horizontal frame work and details to be submitted to GNC for approval

3.15.2 The drawing to be submitted to GNC for approval.

3.16 Lifebuoys and Fire Extinguishers

3.16.1 According to the General Arrangement Plan, the contractor should supply and install four (4) lifebuoys. The type and locations shall be agreed with GNC before installation. Approval certificates issued by a maritime organisation should be submitted to GNC.

3.16.2 Three (3) fire buckets with lanyard and one 4.5kg portable powder fire extinguisher should be supplied and installed as shown on the "General Arrangement" plan. Fire extinguishers shall be ready for use and located in easily visible places such that they can be reached quickly and easily at any time in the event of a fire. Portable fire extinguishers shall be properly secured in place. Portable fire extinguishers should be provided with devices to identify whether they have been used. Fire extinguishers shall be Type-Approved by the RO or other international standards. Certificates shall be submitted to GNC before Delivery Acceptance.

3.17 Electrical Fittings

3.17.1 All electrical equipment, fittings, instruments, switches, cables, insulation, sheathing, circuit breakers, rating standards and their installations shall comply with the latest Regulations of the International Electro-technical Commission (hereinafter referred to as IEC), Electrical Installations in Ships.

3.17.2 Protective devices such as circuit breakers or fuses shall be provided at the source of power, e.g. the switchboard, to interrupt any overload current in the circuit conductors before heat can damage the conductor insulation, connections or wiring-system terminals.

3.17.3 Switches and controls shall be marked to indicate their use, unless the purpose of the switch is obvious and its mistaken operation will not cause a hazardous condition. Each cable shall be clearly labelled and carry its own unique identification code.

3.17.4 The Contractor shall submit a layout plan showing the exact locations of the Equipment. All Equipment shall be accessed easily and safely for inspection and maintenance.

3.17.5 All Equipment installed shall be provided with manuals for operation and maintenance.

3.17.6 The standard of installation shall enhance the Equipment's safety features of not presenting any hazards to the operator, e.g. all metal panels exposed to the operator shall be grounded properly. Warnings of any potential hazards shall be displayed in both English and Chinese, or with universally recognised labels.

3.17.7 Essential drawings and detailed particulars (Electrical System Line Diagram, Wiring Diagram of Main Switchboard, Layout of switchboard, Electrical Arrangement and Wiring Diagram of Distribution Boxes and others but not included such as the rating and capacity, type of all electrical Equipment as well as the wiring, circuit breakers, lighting and sockets, etc.) shall be submitted to RO approval and MD endorsement before installation.

3.17.8 Detailed wiring diagrams of the complete supply and distribution network, including wire size, insulation and sheathing shall be submitted for RO approval and MD endorsement before commencement of the installation.

3.17.9 If electrical fittings, not of aluminium, are connected to aluminium, suitable means is to be taken to prevent electrolytic corrosion.

3.17.10 Electric Appliances required to meet the Mandatory Energy Efficiency Labelling Scheme(MEELS) through the Energy Efficiency (Labelling of Products) Ordinance, Cap.598

3.17.11 It is desirable that the tenderer can provide batteries with longer cycle life, but without Lead. [D]

3.17.12 Where applicable, there shall be a meter to indicate battery conditions such as battery power.

3.18 Mission Lighting

3.18.1 Contractor shall design a solar panel system with control invertor to convert solar energy to electrical energy and store in batteries. The control invertor and batteries stored in switchboard should have sufficient electrical capacity and will supply power to pontoon lightings during night time. Battery capacity calculation base on thirty-six (36) hours of lighting operation. Solar panel daily operation time under sunlight subject to 8 hours per day. LED lamp to be easy for maintenance and available in Hong Kong local market. Color temperature shall be approved by GNC. Timer and photocell are equipped to save energy in day time. Proximity and motion sensor to be provided for switch on/off the Lamps. [E]

3.18.2 The solar panels shall be installed above the awning of the pontoon. The solar panels shall be installed in an angle that will not reflect the light to the buildings at shore.

3.18.3 Switchboard shall be built by stainless steel, weather proof and have sufficiency space containing the batteries and control circuits. Natural vented to maintain appropriate internal temperature specified by battery and electric component manufacturers. Hinge joints are material of stainless steel. Cabin door shall be able to lock by pack lock or other means.

3.18.4 An instruction plate with a schematic wiring diagram illustrating the operating procedures and precautions for the selection of battery banks and charging of batteries shall be provided in the vicinity of the charger, battery selection switchboard and charging distribution board.

3.18.5 On the switchboard panel, indication of system conditions such as voltage and ampere of the solar power, battery charging system and battery consumption to be displayed.

3.18.6 Metres or earth lamps to indicate the state of insulation.

3.18.7 Protection device with over-current and short circuit trips for 24V D.C. bus and feeder circuits.

3.18.8 Rubber insulation mat or other means shall be provided at the front of switchboard.

3.18.9 Battery selector/isolator switches shall be provided between battery chargers and the battery banks served.

3.18.10 Batteries shall be maintenance free type and should contain no Lead.

3.18.11 The batteries as required in Paragraphs 3.17.10 shall be subjected to continuous trickle charge under normal operation of the vessel by an automatic battery charger.

3.18.12 It is desirable that the capacity of batteries and Solar Panel is able to prolong the endurance for light as specified at Paragraph 2.6.1. [D]

3.18.13 The following MD approved lights and navigation lights are to be installed to the vessel:

(a) Four (4) LED (minimum 20w) floodlights as shown on "General Arrangement" plan. Passive infrared motion sensor allows the light to be switch on automatically when a person or moving object is detected. Passive infrared motion sensor sensing distance up to minimum 12M at 120 degrees. Function button is provided to choose auto/manual mode for switching on the floodlight. Luminous surface and lamp beads more than 700lm. Water resistant rating is IP65.

(b) Sufficient numbers of LED (minimum 5W/each) lights underneath the awning of the pontoon for illumination. Water resistant rating is IP65. Dimmer to be equipped for adjustment. The lights should have side cover shells to limit the light to side direction.

(c) 24-hour timer switch and photocell kits for the lighting control system.

(d) All necessary fittings and protection devices essential for the proper functioning of the whole electrical system should be provided.

(e) One (1) LED anchor light with lamp post should be provided and installed at the locations as shown on the "General Arrangement" plan.

(f) Two (2) LED side lights with lamp posts should be provide and installed at the appreciate locations.

(g) It is desirable that LED light has lifetime longer than 10000 hours to minimize the maintenance cost. [D]

(h) The normal working profile of lights:

(i) Anchor light – continuous

(ii) Floodlights -150 minutes per day

(iii) Awning lights – 300 minutes per day

Chapter 4 Machinery

4.1 General Philosophy

4.1.1 In determining the appropriate design for the Vessel, all of the following factors shall equally be taken into account without one outweighing another.

(a) Vessel performance (including engine rating and size of the Vessel).

(b) Initial cost.

(c) On-going cost (including maintenance cost, petrol consumption, and spare parts).

(d) Reliability (frequency and time to repair breakdown).

(e) Time between maintenance periods.

(f) Time to undertake scheduled maintenance (downtime).

(g) All machineries and equipment installed in the Vessel shall be serviceable in Hong Kong.

4.1.2 Allowable Vessel downtime (including scheduled preventive maintenance and unscheduled repair and maintenance) shall not exceed 10% of the total hours of operation per month based on the operation profile as specified in Paragraph 2.7.1 of Chapter 2 of this Part VII.

4.1.3 Maintainability – the Vessel shall be easy to maintain by ensuring that there shall be:

(a) Good access to all installed items for monitoring, service and overhaul.

(b) Ease access to in-situ service and maintenance in Hong Kong.

4.2 Information to be Provided Prior to and at Delivery Acceptance

4.2.1 Information provided prior to Delivery Acceptance:

(a) Detailed inventory list for the whole Vessel to be submitted to the Government for approval.

(b) The Inventory List shall cover all discrete items down to major component/unit level.

(c) Full details of each item including:

(a) Item number

(b) Description

(c) Type or model (if applicable)

(d) Quantity

(e) Manufacturer

(f) Manufacturer’s reference number

(g) Location in Vessel

(h) Local agent/supplier address, telephone and fax numbers

(d) Four paper copies and One soft copy of the Inventory List shall be provided to MD.

4.2.2 "As Fitted" drawings and other information shall be supplied.

The Contractor shall supply the following items upon Delivery Acceptance of the Vessel:

(a) Four complete sets of paper print drawings of the Vessel and ONE soft copy in Compact Disk (CD-ROM).

(b) Four complete sets of paper print as fitted electrical schematic, cabling, wiring and single line diagrams for electrical equipment installed on board and conduit / trunk route diagram and one soft copy in CD-ROM as per the Vessel delivered.

(c) Four copies of equipment list for all Equipment. The list shall include:

(a) Description

(b) Type or model (if applicable)

(c) Makers part number or equivalent (if applicable)

(d) Location

(e) Quantity

(f) Supplier or agent's name and contact address

(d) Four copies (at least one original) of maker operation, maintenance and workshop manuals for each piece of Equipment in English.

(e) Four paper copies and one soft copy in CD-ROM "Docking Plan" of the Vessel which shall include the profile, plan and sections prepared by the Contractor.

(f) Four copies of On Board Operator's Manual (English and Chinese) covering:

(a) Daily user checks and operation procedure.

(b) Operating detail of each system.

(c) Emergency operation procedure.

(The precise format and detail required will have to be subject to the GNC's approval when the configuration of the Vessel and outfitting is decided.)

(g) The first draft of the on board Operator's Manual (in both English and Chinese) shall be submitted to GNC for approval one month before documentation acceptance.

(h) The documentation for all Equipment, Spare Parts, special tools and test equipment shall be provided at the Delivery Acceptance of the Vessel.

4.2.3 Tools & Test Equipment for Electronics

(a) Delivery of all test and tool equipment for the electronics equipment of the Vessel will be directly to GNC.

(b) All items shall be properly documented, preserved and packed.

4.2.4 Photographs

(a) As-Fitted Photographs

(a) Two sets of colour prints (130 mm x 90 mm) from different aspects to give an overall picture of the various parts/areas of the Vessel shall be provided upon Delivery Acceptance.

(b) Each print shall be enclosed in a suitable album and labelled showing the position of the content.

(b) Official Photographs

(a) Four framed colour photographs of picture size not less than 350 mm x 270 mm and frame size not less than 510 mm x 400 mm showing the profile of the Vessel in Hong Kong Waters shall be provided upon Delivery Acceptance.

(b) Four 200 mm x 150 mm colour photographs with specifications of vessel particulars showing the profile of the Vessel in Hong Kong Waters shall be provided upon Delivery Acceptance.

(c) Four 150 mm x 100 mm colour photographs showing the profile of the Vessel in Hong Kong Waters shall be provided upon Delivery Acceptance.

(c) Softcopy of Photographs

All photographs as required in the sub-paragraphs (a) and (b) above shall be taken by way of digital camera in JPEG format at a resolution of not less than 5.0 M pixel. The photographs shall be stored in Compact Disk (CD-ROM) and forwarded to GNC at the time of Delivery Acceptance.

4.2.5 Certificates and Reports

Copies of the following documents (one original with two copies and one soft copy stored in CD-ROM), filed in clear folders, shall be forwarded to GNC at the time of Delivery Acceptance:

(a) Associated test certificates.

(b) Test performance certificates of Equipment as required in this Part VII.

(c) Complete record of the commissioning tests.

(d) Original copy of the warranty certificates of all Equipment (valid for 12 months from the date of Acceptance Certificate of the Vessel).

(e) Certificates issued by the manufacturer of light and sound signalling equipment.

(f) Builder certificates.

(g) Certificates of building material.

(h) Hull construction material issued by the RO.

(i) Undertaking duly signed and sealed by the Contractor's (or its Sub-contractor's) shipyard for providing Warranty Services in relation to all aspects of the

Vessel during the Warranty Period in Hong Kong as stipulated in Annex 1 of this Part VII - Technical Specification.

(j) Certificate of Classification issued by the relevant RO.

(k) Any other certificates as appropriate.

4.2.6 Ship Model

(a) The Contractor shall supply three (3) ship models (scale 1:60) for display and training purpose.

(b) The purpose of the ship model shall provide a reasonable realistic appreciation to the viewer (who cannot see the actual vessel) about the shape, scale, construction of the Vessel and the machinery installations and fittings therein. Hence the model shall include the position and look of the major external fittings including but not limited to the skeg, appendages, awning, fittings, lights and any other external above and under water items; and the Vessel shall be made to an overall exact scale standard relevant to model making.

Chapter 5 Training

5.1.1 The training shall be provided in Hong Kong for the operation of the solar system. The training programme shall be provided by Contractor and agreed by GNC.

Chapter 6 Abbreviations

AC	Alternating Current
AIS	Automatic Identification System
AML	Additional Military Layers
ARCS	Admiralty Raster Chart Service
ARPA	Automatic Radar Plotting Aid
ASCII	American Standard Code for Information Interchange
ASTM-SAE	American Society for Testing and Materials Safety Standard
ASTM	American Society for Testing and Materials
ASWF	American Standard Window Film
AUX	Auxiliary
AWS	American Welding Society
BER	Bit Error Rate
BS	British Standards
CDI	Course Deviation Indicator
CD	Compact disc
CD-ROM	Compact Disc Read-Only Memory
CFC	Chlorofluorocarbon
CH	Channel
cm	
CMR	Compact Measurement Record
CO2	Carbon Dioxide
COG	Course over ground
CPU	Central Processing Unit
dB	Decibel
dBm	Decibel-milliwatts
D.C.	Direct Current
DGNSS	Differential Global Navigation Satellite System
DGPS	Differential Global Positioning System
dia.	diameter
DNC	Digital Nautical Chart
DSC	Digital Selective Calling
DTM	Digital Terrain Model
DVD	Digital Versatile Disc
DVI	Digital Video Interface
ft	feet
FTP	Fire Test Procedures
GB	Gigabyte
GeoTIFF	GeoTIFF Format File
GHz	Gigahertz
GLONASS	Global Navigation Satellite System
GM	Metacentric Height
GMDSS	Global Maritime Distress Safety System
GMSK	Gaussian Minimum Shift Keying
GMT	Greenwich Mean Time
GPS	Global Positioning System
GRP	Glass Reinforced Plastic
GSOF	General Serial Output Format
GZ	Righting Lever

HCFC	Chlorodifluoromethane
HD	Hard Disk
HDCP	High -bandwidth Digital Content Protection
HDD	Hard Disk Drive
HDMI	High Definition Multimedia Interface
Hz	Hertz
IBSS	International Bibliography of the Social Sciences
IEC	International Electrotechnical Commission
IEEE	Institution of Electrical and Electronic Incorporated Engineers
IHO	International Hydrographic Organization
IMD	Intermodulation Distortion
IMM	International Maritime Mobile
IMO	International Maritime Organization
INS	Inertial Navigation System
IP	Ingress Protection
IPX	Internetwork Packet Exchange
IS	Intact Stability
ISO	International Organization for Standardization
ITU-R	International Telecommunication Union – Radiocommunication Sector
Kg	Kilogram
kHz	Kilohertz
kt	Knot
kW	Kilowatt
kt/hr	Knot per hour
km	kilometre
km/hr	Kilometre per hour
LAN	Local Area Network
LCD	Liquid Crystal Display
LCG	Longitudinal Centre of Gravity
LED	Light-emitting Diode
LSA	Life-Saving Appliance
m	Metre
m/s	Metre per Second
m3/hr	Cubic Metre per Hour
min	Minimum
m/min	Metre per minute
max	Maximum
MHz	Megahertz
MJ/m2	Megajoule per Square Metre
MKD	Minimum Keyboard Display
mm	Millimetre
MIL-STD	United State Military Standard
MMC	MultiMediaCard
MS PRO	Memory Stick PRO
MS PRO Duo	Memory Stick PRO Duo
MSC	Maritime Safety Committee
MSK	Minimum Shift Keying
mV	millivolt
NAVSEA	Naval Sea Systems Command
NDT	Non-Destructive Test
nm	nautical mile
NMEA	National Marine Electronics Association
NTRIP	Networked Transport of RTCM via Internet Protocol

NUC	Not Under Command
ohms	Unit of Electrical Resistance
P & S	Port and Starboard
ppm	Part per Million
PVC	Polyvinyl Chloride
QZSS	Quasi-Zenith Satellite System
RF	Radio Frequency
RG58U	RG58U Type Coaxial Cable
RO	Recognised Organisation
rpm	Revolutions per Minute
RT	Radioactive Test
RS232	Recommend Standard number 232
RTCM	Radio Technical Commission for Maritime Services
SATA	Serial Advanced Technology Attachment
SBAS	Satellite-based Augmentation System
SD	Secure Digital
Sec	Second
SINAD	Signal-to-noise and Distortion Ratio
SOLAS	Safety of Life at Sea
SSD	Solid-state Drive
SVP	Sound Velocity Profiler
TCG	Transverse Centre of Gravity
TFT	Thin-film Transistor
TNC	Threaded Neill-Concelman connector
TIFF	Tagged Image File Format
TS	Technical Specifications
U	Rack Unit (1U = 44.45mm high)
UHF	Ultra High Frequency
USB	Universal Serial Bus
UT	Ultrasonic Test
UV	Ultraviolet
V	Volt
VAC	Voltage of Alternating Current
VCG	Vertical Centre of Gravity
VDC	Voltage of Direct Current
VGA	Video Graphics Array
VHF	Very High Frequency
VMAP	Vector Map
VRS	Virtual Reference Station
V.S.W.R.	Voltage Standing Wave Ratio
W	Watt
WLED	White Light Emitting Diode
WMS	Web Map Service
XGA	Extended Graphics Array
PPS	Pulse Per Second
2U	Rack Unit (2U = 88.9mm high)
3U	Rack Unit (2U = 133.35mm high)

Part VII - Annex 1 - Warranty Services and Guarantee Slipping

1. Warranty Services

1.1 The Contractor shall provide Warranty Services in relation to all aspects of the Vessel during the Warranty Period, including Guarantee Slipping as stipulated in this Annex. Both the Warranty Services and Guarantee Slipping shall be carried out locally in Hong Kong. If the Contractor appoints an authorised agent to perform the Warranty Services, the Contractor shall ensure that the authorised agent appointed will perform the Warranty Services and Guarantee Slipping in full compliance with the requirements of the Contract including those as set out in this Annex 1.

1.2 The Government reserves all rights and claims against the Contractor in the event that any warranty claim has not been handled in accordance with the terms of the Contract.

1.3 For the Equipment in respect of which the manufacturer/supplier does not offer a one-year free warranty on such equipment, the Contractor shall provide the Warranty Services throughout the Warranty Period at the Contractor's own cost. For other loose equipment and installations, such as life-saving and firefighting equipment, etc., which are required to be serviced, inspected or renewed annually, the Contractor shall provide the servicing, inspection and renewal as per the manufacturer's requirements of that equipment or installation in the Warranty Period applicable to such items.

1.4 During the Warranty Period, when the Vessel is handed over for the Warranty Services and/or Guarantee Slipping, the Contractor shall be responsible for the due return of the Vessel in good order. Should there be any loss or damage of the Vessel or any Warranty Item (as defined in Paragraph 1.5 below) caused by any reason whatsoever while the Vessel is in the possession or control of the Contractor (including even when the Vessel is at the Government Dockyard or a maintenance base of the user department) or at the shipyard of the Contractor or an authorised agent appointed by it, the Contractor shall pay for the cost for the loss or damage plus 20% as and for liquidated damages but not as a penalty. Throughout the Warranty Period, notwithstanding anything to the contrary in the Contract, the Vessel and all Warranty Items are deemed to be at the Contractor's risks, and the Contractor shall insure and keep insured, at his own expense, a property insurance with the Government to be named as the sole payee, for an indemnity amount of not less than the purchase price of the Vessel plus 20% to protect the Government property against all risks. The Certificate of Insurance and evidence showing that the premium has been paid shall be available for inspection in advance. The Contractor shall provide this insurance policy before the commencement of the Warranty Services and/or Guarantee Slipping. Any excess payable under the insurance policy shall be borne by the Contractor.

1.5 Total Vessel Warranty

It is required that the Vessel is covered by free of charge Warranty Services for one year after the date of the issue of the Acceptance Certificate in respect of the Vessel. The Warranty Services shall cover the entire Vessel and all its fittings and outfit (including spare parts, and documentation) (collectively, "Warranty Items") against defects of design, construction, workmanship or materials and against any non-compliance with any of the Product Warranties. The Warranty Services may be backed up by the Contractor using individual equipment suppliers/manufacturers' warranties but the Contractor shall remain solely liable to MD as a primary obligor to provide the Warranty Services. Notwithstanding and without prejudice to the Contract on warranty obligations for the total Vessel, any individual equipment supplier/manufacturer's warranty extending beyond the one year total Vessel warranty must be assigned to the Government as appropriate.

1.6 Procedures for Warranty Claim

Without prejudice to the provisions of the Contract, a detailed procedure for dealing with warranty claims must be proposed by the Contractor and agreed by MD before the issuance of the Acceptance Certificate of the Vessel. This shall be based on the following principles:

1.6.1 Any notification of claimed defect shall be sent from MD to the Contractor through a defined route.

1.6.2 There shall be a joint inspection to examine the defect and the Contractor shall propose the

appropriate and necessary remedial action to the satisfaction of MD.

1.6.3 The Contractor shall undertake on-site Warranty Services (including provision of all replacement Warranty Items, spare parts, labour, materials, test equipment, and transportation) wherever, at the option of the Government, the Vessel is berthed in the Government Dockyard or maintenance bases of the user department. Taking the Vessel to the shipyard of the Contractor should be avoided unless absolutely necessary.

1.6.4 Rectification of defects must have a minimum effect on the operation of the Vessel by the provision of on loan equipment if the anticipated repair time exceeds the time frame as specified in Paragraph 1.7.1 below.

1.7 Throughout the Warranty Period, the Contractor shall be responsible for the provision of free of charge corrective maintenance and rectification of all defects in all and any of the Warranty Items including repair and replacement as necessary. This shall, at no cost to the Government, include Warranty Services to be performed by the Contractor described in the following sub-paragraphs:

1.7.1 To attend to the Vessel for inspection and repair within 24 hours (excluding Hong Kong public holidays) of receiving the report of a fault ("fault report") and to take immediate action to rectify the defect after inspection. Unless otherwise agreed by the Government, all corrective maintenance and rectification must be effected within 48 hours after the fault report is first issued. The MD must be informed of what corrective maintenance and rectification actions have been taken within 72 hours of receiving the relevant fault report.

1.7.2 To provide all necessary transport, replacement Equipment, spare parts, labour and materials, tools and testing instruments required for the corrective maintenance and rectification.

1.7.3 Any replacement item or part to be used shall originate from the manufacturer of the original Warranty Item to be repaired and must be able to be found in the latest spare parts list issued by such manufacturer. Alternative components shall not be used without the prior approval in writing of the MD.

If the Contractor fails to respond to any reported warranty claims within 48 hours, the MD may arrange corrective maintenance and rectification of the defect either on its own or by deploying a third party contractor as deemed appropriate with a view to minimising any downtime incurred. In such case, the Contractor shall compensate the Government for the full cost of such repairs plus 10% as and for liquidated damages but not as a penalty no later than 10 working days after a written demand has been served on the Contractor by MD.

1.8 Extension of Warranty

1.8.1 The Warranty Period for any Warranty Item shall be suspended whilst and if the Contractor fails to repair and correct satisfactorily the defects in such Warranty Item within seven working days counting from the date when the relevant fault report was first issued.

1.8.2 Warranty Items which are electronic equipment sub-assemblies, modules or components and which are replaced during the Warranty Period shall have a new warranty period of one year commencing from the date of replacement.

1.8.3 In relation to a Warranty Item, references to Warranty Period shall be construed to include such extended warranty period as mentioned in Paragraph 1.8.1 and/or 1.8.2 above, depending on whichever is applicable.

1.8.4 Equipment which is found to be defective during the trials at the Guarantee Slipping as mentioned in Paragraph 2.2.5 below shall have an extension of warranty of one year.

1.9 Recurrent Defects

During the Warranty Period, should a second and similar defect arise in relation to a Warranty Item, this shall be construed as conclusive evidence of the Warranty Item's unsuitability for the purpose intended, and the Contractor shall take immediate steps to conduct a thorough investigation jointly with MD at the Contractor's expense, to ascertain the reasons for any such defect and shall forthwith at the MD's option and the Contractor's expense, procure and deliver another replacement Warranty Item with a new design suitable for the purpose intended to replace the original defective Warranty Item.

1.10 In the event that the Contractor proposes to modify any Warranty Item or any part of the Vessel in

order to repair or replace the same or another Warranty Item, the Contractor shall obtain the Government's advance written consent to the proposed modification.

1.11 Throughout the Warranty Period, the Contractor shall maintain an inventory of spare parts, which shall be the same items as listed in Schedules 6 and 7 in Part V and in the same quantity in the shipyard of the Contractor which the Contractor shall use for performing the Warranty Services. The Government will not provide its own inventory of the Spare Parts to the Contractor for the provision of the Warranty Services.

1.12 Updated/Upgraded Information

It is expected that during the Warranty Period certain Warranty Items may be modified or changed. All documentation affected by this change must be updated to reflect the new situation. All the support documentation such as the Vessel inventory list, job information and maintenance scheduling in relation to these modifications and changes shall be provided at the expiry of the Warranty Period.

2. Guarantee Slipping

2.1 As stated in the section "Warranty" above, Guarantee Slipping shall be carried out at the end of the original Warranty Period regardless of any subsequent extension in relation to any Warranty Item under the terms of the Contract.

2.2 At the Guarantee Slipping, the Contractor shall carry out the following work and provide all necessary materials, spare parts, labour and equipment in order to carry out such work:

2.2.1 Pre-guarantee slipping inspection and trial

(a) Joint inspection with trial to confirm the list of guarantee slipping items; and

(b) Collect vessel performance information beforehand for comparing when guarantee slipping completion

2.2.2 Hull and Deck Items (where applicable)

(a) Paint Under the Water Line

(i) Paint under the water line shall be checked by the paint manufacturer's representative for the effectiveness of one year's protection against marine growth;

(ii) The hull shall be cleaned and readily for inspection of paint damage;

(iii) Damaged paint shall be repaired according to the paint manufacturer's procedures;

(iv) After the repair of the damaged paint as specified at Paragraph 2.2.3(a)(iii), two coats of touch up primer and one coat of touch up shall be applied; and

(v) One touch up anti-fouling paint of finishing coat shall be applied to the damaged paint as specified at Paragraph 2.2.3(a)(iii).

(b) Paint Above the Water Line

(i) Damaged paint on the hull above the water line and deckhouse shall be repaired properly. After repair, two coats of touch up primer and one coat of touch up (finishing) shall be applied;

(ii) Two coats of paint shall be applied on the Vessel's name, draft marks and insignia; and

(iii) One full coat of anti-slip paint shall be applied to the open and side deck.

(c) Free, clean, grease and recondition all moving parts of the deck fittings, i.e. WT (water tight) hatches, vent covers, rollers and fairleads and anchor chain stoppers, etc.

(d) Renew all zinc anodes on hull, rudder(s) and tail shaft(s).

(e) Free, clean and repaint the anchor chain and swivel set.

2.3 After Guarantee Slipping, the Contractor shall submit the above works completion report to the Government Representative.

Milestones		Completion Dates
1	Issuance of "Notification of Conditional Acceptance"	To be advised after Tender Evaluation
2	Contract Date (the date of the last party signing the Articles of Agreement)	The date when the last party signs the Articles of Agreement. The Government will not sign the Articles of Agreement until and unless the Contractor fulfils all of the conditions precedent as specified in Clause 25.2 of Part II Conditions of Tender (save to the extent waived by the Government, if any).
3	Kick-Off Meeting	To be held within two (2) months after the Contract Date at the Government Dockyard or the Contractor's Shipyard
4	Completion of design with GNC approval	The Contractor shall propose the completion dates of Milestones 4-8 for GNC's approval within two (2) months after the Contract Date.
5	Completion of hull of the Vessel	
6	Completion of awning and solar system of the Vessel	
7	Launching of the Vessel	
8	Conduct of all tests, inspections and trials as part of the Technical Acceptance including the Yard Trial	
9	Shipment to Hong Kong	
10	Delivery Date	The Delivery Date for the Vessel shall be no later than the date set out in Schedule 2 (Delivery Schedule) of Part V

Item No.	Drawings Approval	Completion Date
1	General Arrangement Plan	All the drawings are required to be submitted in two months after Signing of Articles of Agreement for GNC's approval / reference.
2	Safety Plan showing the arrangement of (a) Lifesaving appliances (b) Firefighting apparatus (c) Light signals	
3	Lines Plan	
4	Hydrostatic curves, Cross Curves and Preliminary Intact Stability	
5	Preliminary Inclining Experiment Report/Lightweight Survey report	
6	Preliminary Stability Information Booklet	
7	Weight and Centre of gravity calculation	
8	Tank Capacity Plan	
9	Structural Construction Plan in Mid-Ship and Scantling Calculation	
10	Profile and Details of Deck and Bulkheads.	
11	Shell Expansion Plan	
12	Details of Fender Equipment.	
13	Details of Galvanic Corrosion Prevention (throughout the vessel)	
14	Electrical System Line Diagram	
15	Wiring Diagram of Main Switchboard and Solar-Lighting System	
16	Layout of Main Switchboard and Solar-Lighting System	
17	Schematic drawings of Solar System and Mission Lighting System	
18	Electrical Load Calculations	
19	Painting Schedule	
20	Any other drawings as required by GNC	

Part VII Annex 4 – Main Items Inspection Timetable

Item No.	Items to be Inspected			Completion Date	
	Hull Structure, Layout and Outfitting Inspection				
H-1	Mould lofting				
H-2	Construction materials checking for hull and awning				
	(a)	Steel plate mark checking for hull and awning			
	(b)	Material certificates verification			
H-3	Welding consumables & welders certificates				
H-4	Keel laying for hull				
H-5	Fabrication of hull up to main deck in stages of work, including:				
	(a)	Alignment			
	(b)	Edge preparation			
	(c)	Welding			
	(d)	Workmanship			
	(e)	Compliance with approved plans			
	(f)	NDT (X-ray) of welds			
	(g)	Hull internal work inspection			
	(h)	Plating thickness gauging			
H-6	Welding construction and pressure tests of tanks				
	(a)	ballast tanks and void tanks			
		(i)	Tank construction (internal/external/fitting)		
		(ii)	Tank pressure test		
H-7	Hose test for hull				
H-8	Function tests of various outfitting items				
H-9	Watertightness or weathertightness of openings				
	(a)	Manholes			
	(b)	Air pipes			
H-10	Painting inspection of different layers				
H-11	Draught marks and vessel dimensions verifications				
H-12	Zinc anodes and lightning system				
	(a)	Installation of zinc anodes			
H-13	Life-Saving and Firefighting Appliances				
H-14	Inclining experiment and/or lightship weight measurement				
H-15	Pre-shipment trials including operation test of outfitting equipment.				
H-16	Towing test static bollard pull test				
H-17	Site towing demonstration trial				
H-18	Cleanliness inspection before acceptance				
H-19	Inventory check in the HKSAR				
H-20	Acceptance and delivery				
	Electrical and Machinery Installation				
EM-1	General inspection on Electrical installation				
(a)	General inspection of cable layout & checking of cable sizes				
(b)	Inspection of cable penetrations of bulkhead and deck				

EM-2	Solar Panels and Batteries installation:		
(a)	Inspection of Solar Panels installation		
(b)	Inspection of battery connectors and housing boxes		
(c)	Inspection of battery charger and transformers		
(d)	Operational test of battery charger		
(e)	Inspection of Main switchboard & panels		
EM-3	Lighting:		
(a)	Inspection and functional test of general lighting		
(b)	Inspection and functional test of floodlight		
(c)	Navigational lights and signals		

Note:
These inspection items are preliminary and not exhaustive. Any items found necessary to be included at a later stage will be added to this list.

Part VII - Annex 5 – Summary of Acceptance Inspections at Delivery

Item No	Items to be Inspected	Check Date
	HULL	
1	Hull	
2	Awning	
3	Function test of various outfitting items	
4	Ballast compartments, void space. Air Test should be conducted by Certificated Company before entry	
5	Hose test for Water tightness or weather tightness of openings including manholes, hatches, doors, windows, air pipes, cable gland etc.	
6	Painting	
7	Vessel dimension verification	
8	Draught marks verification	
	MACHINERY AND ELECTRICAL	
9	Function test of solar panels and battery charging system	
10	Cables layout and installation	
11	DC or AC power distribution	
12	Function test of Floodlights and Lightings	
	FIRE FIGHTING AND LIFE SAVING	
13	Firefighting appliances	
14	Lifesaving appliances	
	INVENTORY	
15	Inventory check	
	DOCUMENTS	
16	As fitted Drawings	
17	Equipment Certificates	
18	Cleanliness of vessels before acceptance	

Witness by:	MD Representative	Shipyard Representative

Part VII - Annex 6 - As-fitted Drawings and Machinery/Equipment documents and information literature to be delivered to the Government at Delivery Acceptance

1. As-Fitted Drawings

1.1 Upon delivery of the Vessel, the Contractor shall deliver to the Government four (4) hard copies and two (2) soft-copies in pdf. and dwg. formats of the following plans and drawings that contain the technical information of the Vessel and its machinery and equipment as they are on the day when the Vessel is accepted by the MD. These are termed the final version of the "As-Fitted" Plans and Drawings, and they shall consist of the following plans and drawings as well as any other plans and drawings that may be required by GNC/MD during the design and construction of the Vessel and before the Vessel is accepted by the Government.

1.2 The As–Fitted Plans and Drawings shall be prepared by professional ship draughtsmen in the professional manner, scale, size and style normally required in the ship design and construction business sector. All plans and drawings shall show and be clearly marked with the profile, plan, and section views of the layout, arrangement details, and construction details in the manner required by GNC.

1.2.1 General Arrangement Plan;
1.2.2 Safety Plan of arrangement for Lifesaving, Firefighting, light signal appliances;
1.2.3 Lines Plan;
1.2.4 Hydrostatics, Cross Curves and Intact Stability Plan;
1.2.5 Stability information booklet and the inclining experiment report;
1.2.6 Weight and Centre of Gravity Calculations;
1.2.7 Tank Capacity Plan;
1.2.8 Structural Construction plan, including Mid-Ship and Scantling Calculation, Frame Construction, Shell Expansion, Bulkhead Construction, Awning Construction, Bollard Construction, Manhole Construction, Superstructures to deck connection detailed construction;
1.2.9 Details of Fender Equipment;
1.2.10 Detailed of Galvanic Corrosion Prevention throughout the vessel;
1.2.11 Painting scheme of the whole Vessel;
1.2.12 Draught mark diagram;
1.2.13 Venting with Closing appliances. The down-flooding openings (points) shall be clearing indicated on the drawings;
1.2.14 Docking Plan;
1.2.15 Drawing of Awning and Solar Panel arrangement.
1.2.16 Electrical System Line Diagram;
1.2.17 Wiring Diagram of Main Switchboard and Solar-Lighting System;
1.2.18 Layout and schematic drawings of Main Switchboard and Solar-Lighting System;
1.2.19 Electric Load Calculations;
1.2.20 Lines diagrams of electrical switchboard, protection devices, electrical distribution and installation including cable type, size and working load in the circuits, type and make of circuit breakers and fuses;
1.2.21 Lighting fixtures and fittings;
1.2.22 Solar and Battery charging system;
1.2.23 Installation detail diagrams of Solar-Lighting System;
1.2.24 All manuals and instructions;
1.2.25 Any other drawings as required by GNC.

1.3 Documents to be provided by the Contractor

Not less than one (1) month before the Delivery Acceptance of the Vessel, the Contractor shall provide for GNC's acceptance a list of all documents to be provided.

When the Vessel is delivered to the Government Dockyard, the Contractor shall deliver to the Government all the technical information, leaflets, literature, manuals and booklets etc. and whatsoever items that are necessary for the operation, handling, services, maintenance, spare parts, repairs and the technical understanding of all the engines, machinery, motors, pumps, equipment, fittings and outfitting items of the Vessel.

Part VII - Annex 7 – Definition of Waves and Sea

Beaufort scale number	Description	Wind speed	Wave height	Sea conditions	Land conditions
0	Calm	< 1 km/h (< 0.3 m/s) < 1 mph < 1 knot < 0.3 m/s	0 m 0 ft	Flat.	Calm. Smoke rises vertically.
1	Light air	1.1–5.5 km/h (0.3–2 m/s) 1–3 mph 1–3 knot 0.3–1.5 m/s	0–0.2 m 0–1 ft	Ripples without crests.	Smoke drift indicates wind direction. Leaves and wind vanes are stationary.
2	Light breeze	5.6–11 km/h (2–3 m/s) 4–7 mph 4–6 knot 1.6–3.4 m/s	0.2–0.5 m 1–2 ft	Small wavelets. Crests of glassy appearance, not breaking	Wind felt on exposed skin. Leaves rustle. Wind vanes begin to move.
3	Gentle breeze	12–19 km/h (3–5 m/s) 8–12 mph 7–10 knot 3.5–5.4 m/s	0.5–1 m 2–3.5 ft	Large wavelets. Crests begin to break; scattered whitecaps	Leaves and small twigs constantly moving, light flags extended.
4	Moderate breeze	20–28 km/h (6–8 m/s) 13–17 mph 11–16 knot 5.5–7.9 m/s	1–2 m 3.5–6 ft	Small waves with breaking crests. Fairly frequent whitecaps.	Dust and loose paper raised. Small branches begin to move.
5	Fresh breeze	29–38 km/h (8.1-10.6 m/s) 18–24 mph 17–21 knot 8.0–10.7 m/s	2–3 m 6–9 ft	Moderate waves of some length. Many whitecaps. Small amounts of spray.	Branches of a moderate size move. Small trees in leaf begin to sway.
6	Strong breeze	39–49 km/h (10.8-13.6 m/s) 25–30 mph 22–27 knot 10.8–13.8 m/s	3–4 m 9–13 ft	Long waves begin to form. White foam crests are very frequent. Some airborne spray is present.	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult. Empty plastic bins tip over.
7	High wind, moderate gale, near gale	50–61 km/h (13.9-16.9 m/s) 31–38 mph 28–33 knot 13.9–17.1 m/s	4–5.5 m 13–19 ft	Sea heaps up. Some foam from breaking waves is blown into streaks along wind direction. Moderate amounts of airborne spray.	Whole trees in motion. Effort needed to walk against the wind.
8	Gale, fresh gale	62–74 km/h (17.2-20.6 m/s) 39–46 mph 34–40 knot 17.2–20.7 m/s	5.5–7.5 m 18–25 ft	Moderately high waves with breaking crests forming spindrift. Well-marked streaks of foam are blown along wind direction. Considerable airborne spray.	Some twigs broken from trees. Cars veer on road. Progress on foot is seriously impeded.
9	Strong gale	75–88 km/h (20.8-24.4 m/s) 47–54 mph 41–47 knot 20.8–24.4 m/s	7–10 m 23–32 ft	High waves whose crests sometimes roll over. Dense foam is blown along wind direction. Large amounts of airborne spray may begin to reduce visibility.	Some branches break off trees, and some small trees blow over. Construction/temporary signs and barricades blow over.

10	Storm, whole gale	89–102 km/h (24.7-28.3 m/s)	9–12.5 m	Very high waves with overhanging crests. Large patches of foam from wave crests give the sea a white appearance. Considerable tumbling of waves with heavy impact. Large amounts of airborne spray reduce visibility.	Trees are broken off or uprooted, saplings bent and deformed. Poorly attached asphalt shingles and shingles in poor condition peel off roofs.
		55–63 mph			
		48–55 knot	29–41 ft		
		24.5–28.4 m/s			
11	Violent storm	103–117 km/h (28.6-32.5 m/s)	11.5–16 m	Exceptionally high waves. Very large patches of foam, driven before the wind, cover much of the sea surface. Very large amounts of airborne spray severely reduce visibility.	Widespread damage to vegetation. Many roofing surfaces are damaged; asphalt tiles that have curled up and/or fractured due to age may break away completely.
		64–73 mph			
		56–63 knot	37–52 ft		
		28.5–32.6 m/s			
12	Hurricane	≥ 118 km/h (≥ 32.8 m/s)	≥ 14 m	Huge waves. Sea is completely white with foam and spray. Air is filled with driving spray, greatly reducing visibility.	Very widespread damage to vegetation. Some windows may break; mobile homes and poorly constructed sheds and barns are damaged. Debris and unsecured objects are hurled about.
		≥ 74 mph			
		≥ 64 knot	≥ 46 ft		
		≥ 32.7 m/s			

World Meteorological Organization (WMO) Sea State Code		
Sea State Code	Wave Height (meters)	Characteristics
0	0	Calm (glassy)
1	0 to 0.1	Calm (rippled)
2	0.1 to 0.5	Smooth (wavelets)
3	0.5 to 1.25	Slight
4	1.25 to 2.5	Moderate
5	2.5 to 4	Rough
6	4 to 6	Very rough
7	6 to 9	High
8	9 to 14	Very high
9	Over 14	Phenomenal
Character of the Sea Swell		
	0. None	
Low	1. Short or average 2. Long	
Moderate	3. Short 4. Average 5. Long	
Heavy	6. Short 7. Average 8. Long	
	9. Confused	

Part VII - Annex 8 – Details of Embarking Steps