

State of Maine

Department of Transportation

Project Number FBD-1168 (100)X

PIN 11681.00

Construction of a Passenger/Car Ferry Vessel

Notice to Shipbuilders

Invitation for Sealed Bids

Bid Form

Vessel Construction Agreement

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Section 1

Notice to Shipbuilders

**STATE OF MAINE DEPARTMENT OF TRANSPORTATION
NOTICE TO SHIPBUILDERS**

Sealed Bids addressed to the Maine Department of Transportation, Augusta, Maine 04333 and endorsed on the wrapper “**Bids for the Construction of a 154' LOA Passenger/Car Ferry Vessel**” will be received from contractors at the Reception Desk, MaineDOT Building, Child Street, Augusta, Maine, until 11:00 o'clock A.M. (prevailing time) on **April 29, 2009**.

Description: **Project Number FBD – 1168 (100) X**

Location: **Maine State Ferry Service, Rockland, Maine**

Outline of Work: **Construction of a 154' LOA Passenger/Car Ferry for the Maine State Ferry Service.**

For general information regarding Bidding and Contracting procedures, contact Scott Bickford at (207) 624-3410. Our webpage at <http://www.state.me.us/mdot/project/design/homepg.htm> contains a copy of the Plan Holders List, written portions of bid amendments (not drawings), and bid results. For Project-specific information fax all questions to **Paul Pottle**, Project Manager at (207) 624-3431. Questions received after 12:00 noon on **April 27, 2009** will not be answered. Bidders shall not contact any other Departmental staff for clarification of Contract provisions, and the Department will not be responsible for any interpretations so obtained. Hearing impaired persons may call the Telecommunication Device for the Deaf at (207) 624-3007.

Plans, specifications and bid forms may be seen at the MaineDOT Building in Augusta, Maine. Bidders who are interested in bidding and who send a Letter of Interest to the project manager before March 20, 2009 will be provided a copy of the bid book and the plans. Interested bidders must describe in their Letter of Interest their capability to build this replacement ferry vessel. Send Letters of Interest to:

Paul Pottle, Project Manager
Office of Passenger Transportation,
Maine Department of Transportation
16 State House Station,
Augusta, ME 04333-0016

All Bids must be accompanied by a Bid Bond that complies with Maine DOT's Standard Specifications. Bids must be accompanied by a Bid Bond at 5% of the bid amount or the amount specified in the Notice to Contractors. It can be in the form of an official bank check, cashier's check, certified check, certificate of deposit, or United States postal money order payable to Treasurer, State of Maine as a Bid guarantee.

Please note: the Department will now additionally accept a facsimile of the Bid Bond (for either electronic or paper bids); however, the original Bid Bond must then be received at the MDOT Contract Section within 72 hours after the bid opening. Firms should fax their Bid Bonds to the Contracts Section at 624-3431.

This Contract is subject to all applicable Federal Laws. This contract is subject to compliance with the Disadvantaged Business Enterprise program requirements as set forth by the Maine Department of Transportation.

The 154' LOA Ferry Vessel shall be constructed to Seaworthy Systems, Incorporated Plans (Drawing No. 575-02-100, Title Sheet and Referenced Drawings) and Specifications (Specification for the Construction of a 154' LOA Passenger/Car Ferry for the Maine State Ferry Service", dated February 27, 2009.

The right is hereby reserved to the MaineDOT to reject any or all bids.

Augusta, Maine
April 1, 2009



JOHN E. DORITY
CHIEF ENGINEER

Section 2

Invitation For Sealed Bids

INVITATION FOR SEALED BIDS**FOR THE CONSTRUCTION OF A 154' PASSENGER/CAR FERRY VESSEL FOR THE
MAINE DEPARTMENT OF TRANSPORTATION**

The Maine Department of Transportation ("Department"), with the approval of the Federal Transit Administration ("FTA") and Federal Highway Administration ("FHWA") invites sealed bids from United States citizens for furnishing all labor and materials and performing, in a shipyard located in the United States, all work required for the construction of a passenger/car ferry vessel in accordance with the plans and specifications entitled: "Specifications for the Construction of a 154' Passenger/Car Ferry for the Maine State Ferry Service" ("Specifications"), dated February 27, 2009, and Drawing No. 575-02-100, Title Sheet and Referenced Drawings ("Plans").

For convenience, the Department shall be called the "Owner", and the bidder for the construction of the vessel to whom an award is made shall be called the "Contractor".

INFORMATION AND INSTRUCTIONS TO BIDDERS

1. **Plans and Specifications:** Copies of the Plans and Specifications will be provided to bidders who provide the Owner a Letter of Interest. Such Plans and Specifications are dated February 27, 2009, as revised, and designated:

Specifications: "Specifications for the Construction of a 154' LOA Passenger/Car Ferry For the Maine State Ferry Service", dated February 27, 2009.

Plans: Drawing No. 575-02-100, Title Sheet and Referenced Drawings

It is understood that these Plans and Specifications are for use in preparing a bid in response to this Invitation and are not to be used for any other purpose. The Owner will furnish, in the form of addenda to this Invitation, copies of any changes to the Plans and Specifications made by the Owner subsequent to the date of this Invitation to each person who purchases copies of the Plans and Specifications. Bids shall be based upon the Vessel Construction Agreement described in paragraph 4 hereof and said Plans and Specifications, as so changed by addenda. All such changes shall be incorporated in the contract or the Plans and Specifications.

Copies of the Plans and Specifications will be provided to bidders who provide the Owner a Letter of Interest. Interested bidders must describe in their Letter of Interest their capability to build this replacement ferry vessel. Each bidder must identify its contact person, complete address, telephone number and fax number, in the event contact needs to be made.

2. **Form of Bidding – Bid Form:**

Bids shall be submitted in the form as set out in the bid form annexed hereto. Special care should be exercised in the preparation of the bid.

Three (3) signed originals shall be submitted. Erasures or changes in bids must be explained or noted over the signature of the bidder. Each bid must be complete and must be executed in the name of the bidder by its proper officers or other persons authorized to execute and deliver the bid. When requested by the Owner, satisfactory evidence of the authority of the officer signing on behalf of the bidder shall be furnished promptly. The Owner shall not, after the opening of bids, receive, either directly or indirectly, from bidders, or any persons acting for them, any communication, plan or explanation, either oral or in writing, tending to explain or modify their bid in any way whatever unless such communication, plan or explanation is called for by the Owner, which request the Owner shall have the right to make.

Each bid shall include the total price for completion and delivery of the vessel.

3. **Place and Time of Performance:** Each bid must give the location of the plant or shipyard in which the bidder proposes to perform the contract work. Each bid must also state the construction start date and the number of calendar days (including Saturdays, Sundays and holidays) after date of receipt by the bidder from the Owner of a Notice-to-Proceed hereunder within which the bidder agrees to complete the construction of the vessel.

Delivery of the vessel must be on a date which does not exceed seven hundred twenty (720) calendar days after receipt of the bidder from the Owner of a Notice-to-Proceed. The bid shall be based upon delivery of the vessel to the Owner's pier at Rockland, Maine.

4. **Vessel Construction Agreement:** A Vessel Construction Agreement will be furnished to all prospective bidders who are provided with Plans and Specifications. In the event changes are made in said form of agreement, copies of such changes will be transmitted in addenda to this Invitation to prospective bidder to whom copies of the forms of agreement have been furnished. This agreement will be executed and will become the Vessel Construction Agreement. The Vessel Construction Agreement will be a Contract Document, which, together with the other Contract Documents (including addenda issued before bids are opened and signed modifications entered into after award of the Vessel Construction Agreement), will govern all work related to the construction of the vessel.
5. **List of Major Equipment:** Each bid submitted must be supported by one (1) copy of the backup sheets with respect to each bid; such backup sheets must show the major pieces of equipment. The following equipment must be listed by name, make, model number and the model of the engines to be used and the unit prices of the major pieces of equipment:

| | | |
|------------------------|--------------------------------|---------------------------|
| Air Compressors | Emergency generator switchgear | Propulsion shafting |
| Air Conditioning units | Engineroom ventilation fans | Radars |
| Alarm systems | Exhaust expansion joints | Radios |
| Autopilot | Fire hose nozzle | Rescue boat |
| Batteries | Fire pump | Rescue boat davit |
| Battery chargers | Fuel filter strainers | Seating & tables |
| Boiler | GPS | Shaft bearings |
| Bow thruster engine | Gyrocompass | Shaft brakes |
| Bow thruster unit | Internal communications sys. | Ship's Service Generators |
| CCTV system | Keel coolers | Silencers |
| Chart plotter | Machinery control system | Stern tube seal |
| Chart table | Main propulsion engines | Switchboards |
| Depth sounder | Marine reduction gears | Transformers |
| Elevator | Navigation lighting panel | Watertight doors |
| Emergency generator | Propellers | Watertight hatches |

The Owner also reserves the right, prior to award of a contract, to require that the submitted price of any subcontractors or other pertinent data be furnished promptly upon request. Such backup sheets are requisite to consideration of any bid for award and must accompany such bid, enclosed in a sealed envelope marked in accordance with **Item 10, Identification of Bids. Failure on the part of a Bidder to furnish such backup sheets at the time its bid is submitted may result in its bid being rejected.**

6. **Bidder' Technical Capability:** The bidder's qualifications will be evaluated. A minimum of 75 points will be required to be considered qualified. The bidder must provide in sufficient detail information regarding the items listed below. This information shall be provided to the Owner in a sealed envelope marked in accordance with **Item 10, Identification of Bids. Failure on the part of a Bidder to furnish this information at the time its bid is submitted will result in its bid being rejected.**
- a. Bidder's ability to meet the Specifications, including but not limited to shipyard facilities, organization and key personnel (40 Points).
 - b. Experience performing similar projects or projects of higher complexity (30 Points).
 - c. Contact names and telephone numbers of at least 3 previous customers that have had similar work performed at the shipyard (10 Points).
 - d. Bidder's understanding of the project (include a copy of the Preliminary Master Schedule) (10 Points).
 - e. Statement of the technical expertise, safety plan, years of service and other qualification that the bidder's yard brings to shipyard services (10 Points).
7. **Basis for Award:** Award will be made to the lowest qualified bidder based on a complete and acceptable bid.

It being the intent and purpose that the bidder purchase collectively all services, supplies, materials and equipment for the Owner in a manner that will best secure the greatest possible economy consistent with the grade or quality of the services, supplies, materials and equipment best adapted for the purposes for which they are needed.

In the event the Owner, after the time fixed for the receipt of bids hereunder and prior to the award of a contract, shall so request in writing of any bidder, such bidder shall, within five (5) days after receipt of such request, furnish to the Owner two (2) copies of the following financial statements. Failure on the part of a Bidder to furnish the following financial information may result in its bid being rejected.

- (1) A copy of audited financial statements for the completed accounting year immediately preceding the date of the bid. The financial statements shall, at a minimum, include a balance sheet and a profit and loss statement, and shall provide an unqualified audit opinion by a licensed independent public accountant in accordance with generally accepted auditing standards promulgated by the American Institute of Certified Public Accountants. Additionally, the bidder shall grant to the Owner the right to examine the books, records, and accounts of the bidder, and the audit working papers of the independent public accountant, if and to the extent deemed necessary by the Owner; and
- (2) A brief statement, including references from bidder's bank(s) or financial institution(s), of the nature of any changes in the financial condition of the bidder and the results of his operations since the close of the period covered by the audited financial statements referred to in (1) above.

All Bids must be accompanied by a Bid Bond that complies with Maine DOT's Standard Specifications. Bids must be accompanied by a Bid Bond at 5% of the bid amount or the amount specified in the Notice to Contractors. It can be in the form of an official bank check, cashier's check, certified check, certificate of deposit, or United States postal money order payable to Treasurer, State of Maine as a Bid guarantee.

Please note: the Department will now additionally accept a facsimile of the Bid Bond (for either electronic or paper bids); however, the original Bid Bond must then be received at the MDOT Contract Section within 72 hours after the bid opening. Firms should fax their Bid Bonds to the Contracts Section at 624-3431.

The Owner may make disposition of an official bank check, a cashier's check, a certificate of deposit, or a United States postal money order as will accomplish the purpose for which submitted. An official bank check, a cashier's check, a certificate of deposit, or a United States postal money order for the amounts thereof will be returned as soon as practicable to the unsuccessful bidders after the time fixed for opening of bids, and to the successful bidder after execution of the contract and the furnishing of the surety bonds required thereunder.

8. **Withdrawal of Bids:** A bid may be withdrawn on written or e-mail request from the bidder to the Maine Department of Transportation, Contracts Section, 16 State House Station, Augusta, Maine 04333-0016, Attn Scott Bickford (scott.bickford@maine.gov) only prior to the time fixed for receipt of bids hereunder. Any mistake on the part of the

bidder in preparing his bid confers no right for the withdrawal of such bid after the time fixed for the receipt of bids.

9. **Bids Received Prior to Time Fixed for Receipt of Bids:** Bids received prior to the time fixed for the receipt of bids will be securely kept and unopened, if properly identified. The Owner will open bids on April 29, 2009 at 11:00 AM prevailing time and no bid received thereafter will be considered. No responsibility shall be attached to any representative of the Owner for the premature opening of a bid.
10. **Identification of Bids:** Each bid shall be enclosed in a sealed envelope and marked, **“COST PROPOSAL - FIXED PRICE BID FOR THE CONSTRUCTION OF A 154' PASSENGER/CAR FERRY FOR THE MAINE STATE FERRY SERVICE.”**, pursuant to:
- (1) Invitation for Bids
 - (2) Vessel Construction Agreement
 - (3) Plans and Specifications
 - (4) Addendum No. to Invitation
- (List all addenda to the Invitation by number.)

Responses to Item 5, List of Major Equipment, and Item 6, Bidder's Technical Capability shall be provided in a separate sealed envelope and marked, **“TECHNICAL CAPABILITY and LIST OF MAJOR EQUIPMENT FOR THE CONSTRUCTION OF A 154'LOA PASSENGER/CAR FERRY.”**

11. **Time for Receipt and Opening:** Bids will be received until 11:00 o'clock AM (Prevailing time) on April 29, 2009.
12. **Acceptance and Rejection of Bids:** The Owner reserves the right to reject any and all bids, in whole or in part, to waive any informality and technicality in any bid and to accept any item or items in any bid.

As indicated in the Bid Form annexed hereto, each bidder is required to agree (1) that his bid will not be withdrawn before the expiration of sixty (60) days after the date fixed for the receipt of bids hereunder and (2) that in the event of the expiration of said sixty (60) day period without an award having been made to the bidder, their bid shall remain in full force and effect until an award is made to the bidder or until a written notice of the bidder's withdrawal of his bid shall have been received by the Owner.

Bids shall be in strict conformance with the Plans and Specifications and the provisions of this Invitation for Sealed Bids and any modification that may subsequently be made by addenda thereto. Any departure from the Plans and Specifications and the terms of this Invitation, as modified, will result in a bid being held non-responsive and thereby rejected.

13. **Formal Contract and Bonds:** Within fifteen (15) calendar days after notice of intent to award, the Contractor will enter into a written contract in the form described in Paragraph 4 hereof for the awarded contract work and shall furnish the Owner with Performance and Payment bonds, each in the amount acceptable to the Owner and the Contractor, which bonds shall bind the Contractor as principal and the surety or sureties jointly and severally to the Owner. The surety or sureties and form of such bonds shall be satisfactory to the Owner, see Article 26.
14. **FTA Required Provisions and Clauses:** The bidder shall review and certify that it will abide by the requirements of the FTA Required Provisions and Required Clauses described in Appendices A and B respectively.
15. **Computation of Time:** All periods of time herein specified shall be computed by including Saturdays, Sundays and holidays, except that, if such period terminates on a Saturday, Sunday or holiday, it shall be deemed extended to the business day of the Contractor next succeeding.
16. **Inquiries:** All inquiries with respect to this Invitation and the bidding documents, including the Plans and Specifications, should be addressed in writing to:

Paul Pottle, Project Manager
Multimodal Program
Maine Department of Transportation
16 State House Station
Augusta, Maine 04333-0016

Inquiries may be faxed to 207-624-3431.

17. **Anti-Trust Hotline:** As part of its continuous surveillance of construction contracts, the U.S. Department of Transportation has established a telephone "Hot Line" to receive information from contractors, suppliers, or anyone with knowledge of anti-trust activities as it relates to bid rigging.

The "Hot Line" telephone number is 1-800-424-9071 and will be manned from 8:00 a.m. to 5:00 p.m. EST or Eastern Daylight Time – weekdays. The operation is under the direction of the U.S. Inspector General.

Information will be treated confidentially and anonymity will be respected.

18. **Disadvantaged/Women Business Enterprise.** In compliance with its obligation to the FTA and FHWA, the State of Maine has an established goal for the involvement of Disadvantaged/Women Business Enterprise (D/WBE). On this project, the State of Maine has established (D/WBE) goal at 1.9 % of total project cost.

Contractors are required to extend equal opportunity to certified D/WBEs in the selection and utilization of subcontractors and suppliers. All Bidders are required to submit, as part of their bid, quotes provided by D/WBEs. The DBE proposed utilization plan

requirements are explained in Appendix F, SPECIAL PROVISION. Signature indicates statement of intended utilization is accurate and reflects the bidder's good faith efforts.

19. **On-the-Job Training:** As part of the Contractors' equal employment opportunity, affirmative action program training, the Contractor shall provide on-the-job training (OJT) aimed at developing full journey-workers in the types of trades or job classifications involved in this Contract. The number of hours associated with this requirement shall be 2,000 and done in accordance with the Department's Standard Specifications, Section 660 – On-the-Job Training.
20. **Bidders' Conference:** A bidders' conference will be held from 10:00 AM to 12:00 Noon on April 15, 2009 at the Maine State Ferry service Conference Room in Rockland, Maine. 20. A speakerphone will be available for bidders who are unable to send representatives to the conference. The telephone number at the conference room is Tel. (207) 596-2202. At the voice prompt, dial Extension 242. Two remote callers can call simultaneously. The length of time for each call will be limited to the time required to ask the question and for the Owner to provide the response. All clarifications and responses to questions asked by the attendees and the callers during the bidders' conference will be provided to all bid book holders on April 22, 2009.

Section 3

Bid Form

FIXED PRICE BID FOR THE CONSTRUCTION OF A 154' PASSENGER/CAR FERRY FOR THE MAINE STATE FERRY SERVICE

1. In compliance with the Invitation for Bids of the Maine Department of Transportation, dated April 1, 2009, Information and Instructions to Bidders, Contract Plans and Specifications for a 154' LOA Passenger/Car Ferry Vessel, designed by Seaworthy Systems, Inc., the Vessel Construction Agreement and the Addenda issued pursuant to the said invitation: (herein called the "bidding documents"), which by reference are expressly made a part thereof and incorporated herein, the undersigned, _____ hereby proposes to furnish all labor, service, and materials and perform all work required for the construction of a Passenger/Car Ferry, as indicated below, in strict accordance with the terms and conditions of the bidding documents, and the provisions contained in the form of contract issued by the Owner, for the performance of all the work hereunder, and in any changes in such form of contract issued by the Owner, for the following amount, which amount shall be without adjustment for changes in labor, materials or tax costs:

For the construction of a vessel in ACCORDANCE WITH Contract Specifications (Specifications for the Construction of a 154' LOA Passenger/Car Ferry for the Maine State Ferry Service", dated February 27, 2009) and Plans (Drawing No. 575-02-100, Drawing List and Referenced Drawings), with delivery of the vessel to the Owner's pier at Rockland, Maine for the contract base price of:

_____ Dollars (\$) _____
and a construction start date of : _____.

In addition to the required Base Price Proposal for the vessel and in accordance with the Contract Specifications, the Contractor shall provide bid cost for the following additional options as described specifications.. Each additional option must be all inclusive such that the cost of the proposed change will include all costs and labor associated with the item or system and inclusion or exclusion of the aforementioned item or system from the vessel will not affect any other item or system in the vessel. The Owner shall award the contract on the lowest acceptable base price and will add the options to the awarded contract only as deemed necessary and affordable within current funding. Items may be added out of sequence, so the prices should not be dependent on other items being selected. The additional options are listed below and must be filled in and submitted with the base bid.

| <u>OPTION (Add in)</u> | <u>BID AMOUNT</u> |
|--|--------------------------|
| #1 General Requirements, Spares | _____ |
| #2 Accommodations & Furnishings, Rest Rooms | _____ |
| #3 Accommodations & Furnishings, Pilot House | _____ |

| | |
|--|-------|
| #4 Accommodations & Furnishings, Pilot House | _____ |
| #5 Accommodations & Furnishings, Engine Room | _____ |
| #6 Propulsion General, Control Booth | _____ |
| #7 Fresh Water Cooling System, Transfer Pump | _____ |
| #8 Maneuvering System, Bow Thruster | _____ |
| #9 Electrical Systems, General | _____ |

2. The undersigned Bidder agrees to complete and deliver the vessel within Seven Hundred Twenty (720) calendar days, including Saturdays, Sundays and Holidays, after date of receipt by the Contractor from the Owner of a Notice-to-Proceed.
3. The undersigned Bidder proposes to furnish to the Owner within fifteen (15) calendar days after notice of intent to award, a performance bond in the sum of 100% of the Bid amount pursuant to Article 26 of the Vessel Construction Agreement
4. The undersigned Bidder proposes to furnish to the Owner within fifteen (15) calendar days after notice of intent to award, a payment bond in the sum of 100% of the Bid amount pursuant to Article 26 of the Vessel Construction Agreement
5. The undersigned Bidder proposes that the aggregate amount payable under the performance and payment bonds required pursuant to this Article 26 shall not exceed 100% of the Bid amount, pursuant to Article 26 of the Vessel Construction Agreement.
6. The undersigned also agrees to perform the work at its plant or shipyard located at:

7. The undersigned further agrees:
 - (a) That it will not withdraw the foregoing bid prior to sixty (60) days after the date set for the receipt of the bids.
 - (b) That in the event said sixty (60) day period shall expire without an award having been made; the foregoing bid shall remain in full force and effect until an award is made to the undersigned or until written notice of the withdrawal of said bid shall have been received by the Owner.
8. The undersigned Bidder accepts and agrees to all the terms and conditions of the Invitation for Bids as fully as if they were separately repeated and agreed to in this bid.

9. In accordance with the terms of the subject invitation, this bid proposal is submitted in an sealed envelope and marked, **“COST PROPOSAL - FIXED PRICE BID FOR THE CONSTRUCTION OF A 154’ PASSENGER/CAR FERRY FOR THE MAINE STATE FERRY SERVICE.”** There are filled and submitted herewith;

- (a) Requisite bid guaranty.
- (b) Acknowledgement of Bid Amendments.
- (c) Certifications for the FTA Required Provisions (APPENDIX A)
- (d) DISADVANTAGE/WOMEN BUSINESS ENTERPRISE UTILIZATION BID PROPOSAL (APPENDIX F).

10 In accordance with the terms of the subject invitation, there are filled and submitted in a separate envelope and marked, **“TECHNICAL CAPABILITY and LIST OF MAJOR EQUIPMENT FOR THE CONSTRUCTION OF A 154’LOA PASSENGER/CAR FERRY.”**:

- (a) List of major equipment, including unit cost, enclosed in a sealed envelope and marked, **“List of Major Equipment,”** in accordance with Item 5 of the INVITATION FOR SEALED BIDS.
- (b) Responses to a, b (including a Preliminary Master Construction Schedule), c, d, and e of Item 6 of the INVITATION FOR SEALED BIDS. These responses are enclosed in a sealed envelope and marked, **“Bidder’s Technical Capability.”**

(Name of Bidder)

(Authorized Signature)

(Title) (Date)

WITNESS:

(Name) (Office) (Name) (Office)

(Date) (Date)

SPECIAL PROVISION 102.7.3
ACKNOWLEDGMENT OF BID AMENDMENTS

With this form, the Bidder acknowledges its responsibility to check for all Amendments to the Bid Package. For each Project under Advertisement, Amendments are located at <http://www.maine.gov/mdot/comprehensive-list-projects/project-information.php> It is the responsibility of the Bidder to determine if there are Amendments to the Project, to download them, to incorporate them into their Bid Package, and to reference the Amendment number and the date on the form below. The MaineDOT will not post Bid Amendments any later than noon the day before Bid opening without individually notifying all the plan holders.

| Amendment Number | Date |
|------------------|------|
| | |
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| | |
| | |

The Contractor, for itself, its successors and assigns, hereby acknowledges that it has received all of the above referenced Amendments to the Bid Package.

CONTRACTOR

Date

Signature of authorized representative

(Name and Title Printed)

FTA REQUIRED PROVISIONS

**Sign here certifying that you have read and agree to abide by the attached FTA
REQUIRED PROVISIONS (APPENDIX A).**

Signature

Company Name

Title

Date

FTA REQUIRED CLAUSES
(Submitted With Proposals)

Of the FTA required clauses, the following clauses must be submitted with your proposal. Please sign the Buy America, Lobbying, ADA Access and Transit Vehicle Manufacturer's (TVM) Certifications in APPENDIX B and sign below certifying that you have read and agreed to the attached FTA REQUIRED CLAUSES in APPENDIX B.

- #2 Buy America Certification
- #3 Lobbying Certification
- #5 ADA Access Certification
- #7 TVM Certification
- #1 Pre-Award and Post-Delivery Requirement
- #4 Government-wide Debarment and Suspension
- #6 Disadvantaged Business Enterprise (DBE) Requirements

Signature_____

Title_____

Printed Name and Title_____

Company Name_____

Date_____

**DISADVANTAGE/WOMEN BUSINESS ENTERPRISE
UTILIZATION BID PROPOSAL**

This bid assurance identifies the certified D/WBE firms which the bidder intends to use in meeting the D/WBE goal of this project.

Bidders who do not comply accordingly will find their bid rejected.

Provide in the space below the name and a brief description of the work or bid item(s) to be completed by the D/WBE. Bidders are reminded that the more detailed Pre-Signature Compliance Review form is required by close of business on bid opening day.

It is to be presented to the Civil Rights Office, DOT Building. Completed DBE Proposed Utilization Forms may be faxed to 624-3431 ATTENTION, Civil Rights, but must be received prior to close of business.

D/WBE 1.9% goal

| Name of D/WBE | Description of participation |
|---------------|------------------------------|
|---------------|------------------------------|

Projected Cost of the Above _____

*Signature_____Date_____

***Signature indicates statement of intended utilization is accurate and reflects the bidder's good faith efforts.**

Section 4

Vessel Construction Agreement

Vessel Construction Agreement

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VESSEL CONSTRUCTION AGREEMENT

THIS AGREEMENT is entered into this _____ day of _____, 2009 by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, (“Owner”)

and

_____, (“Contractor”), which has a shipyard at _____, United States of America.

WHEREAS, Owner has determined that a need exists to upgrade its ferry service fleet with one new 154’ LOA passenger/vehicle ferry vessel, (“Vessel”);

WHEREAS, The citizens of the State of Maine recently approved the issuance of bonds to fund the construction of one new ferry vessel to be used by the Maine State Ferry Service in lower Penobscot Bay.

WHEREAS, Owner has obtained competitive bids from domestic shipyards for the construction of the Vessel, Contractor has submitted a bid, and Owner desires to enter into an agreement with the Contractor for the construction of the Vessel; and

WHEREAS, Contractor represents that it has the facilities, manpower and expertise to construct the Vessel in accordance with the terms of this agreement and the Plans and Specifications

NOW THEREFORE, the parties hereby agree as follows:

DEFINITIONS

1. Agreement shall include the provisions contained in this document entitled “Vessel Construction Agreement”, the Plans and Specifications enumerated in Article 2 therein, Federal Transit Administration Capital Grant Project Number ME -03-0045, FHWA Grant Number FBD-011681, and Maine General Obligation Bond 1852.
2. Commissioner means the Commissioner of the Maine Department of Transportation.
3. Contract means all documents affecting the respective rights and responsibilities of the Owner and the Contractor. These documents include but are limited to, the Vessel Construction Agreement (which includes the Specifications attached therein), the Notice to Shipbuilders, the Plans, the Bid Amendments, Contract Modifications, Permits, Bid Escrow Documentation (if any), the Contractor’s bid documents and bid prices, and all documents incorporated by reference.

4. Contract Documents means all documents, whether physically attached or incorporated by reference, which make up the Contract.
5. Defect means any defect, deficiency, deterioration, weakness, breakdown or failure in any material, machinery equipment or workmanship of the Vessel.
6. Department means the Maine Department of Transportation.
7. Naval Architect means Seaworthy Systems, Inc. of Essex, Connecticut, USA.
8. Notice shall include all written notices, demands, instructions, claims, approvals and disapprovals required to obtain compliance with Agreement requirements. Any written notice by either party to this Agreement shall be sufficiently given if delivered to the other party to this Agreement in person or by certified mail to his last known address, or to his authorized agent, representative or officer in a like manner. The person to whom the notice is delivered shall sign the duplicate copy and return same to the other party immediately after receipt. Failure to sign any duplicate copy shall not invalidate the giving of any notice.
9. Owner's Representative means the person or entity designated to represent Owner during Vessel construction.
10. Project Manager means the Department's duly authorized representative for overall coordination of the Project.
11. Subcontractor includes only those people or entities that have a contractual relationship with the Contractor to perform work related to this Contract.

ARTICLE 1 – GENERAL STATEMENT OF WORK

- A. Contractor shall furnish all plant facilities, labor, material and equipment, and shall perform all work necessary to construct, launch, outfit, test and deliver the Vessel, at Contractor's own risk and expense, in strict accordance and compliance with this Agreement except as otherwise provided. Contractor's performance shall include, but not be limited to, the development of additional plans, sketches and technical data ("Contractor-Provided Designs") which are necessary to construct the Vessel in a seaworthy manner but which are not specifically set forth in the Plans and Specifications. Contractor shall also be responsible for the receipt, storage and installation of outfitting and equipment required pursuant to this Agreement. Performance of all work set forth herein shall be for the consideration of the Contract Price. Owner shall be responsible for designs, Plans, Specifications and other information provided by Owner (Owner-Provided Plans). Contractor shall bear no responsibility or liability for defects or deficiencies in Owner-Provided Plans. The Contractor shall bear responsibility and liability for any defects or deficiencies in material, equipment, workmanship and Contractor-Provided Designs.
- B. The Vessel shall be identified as Contractor's hull number ____ and shall be constructed at Contractor's plant or shipyard (hereafter "Shipyard"), located at _____, in the State of _____. The Vessel when completed, after passing all requisite tests and trials, shall be delivered to Owner at the Rockland Ferry Terminal in Rockland, Maine pursuant to Article 14 (Delivery of Vessel) and Article 16 (Contract Delivery Date).

- C. The work to be performed shall be commenced immediately, prosecuted with due diligence and completed, and the delivery of the Vessel, in all respects complying with the terms and conditions of this Agreement and the Plans and Specifications, shall be made on or before the Contract Delivery Date, as may be extended in accordance with the terms hereof.

ARTICLE 2 - PLANS AND SPECIFICATIONS

- A. The Plans and Specifications for the construction of the Vessel are those designated in the document entitled (Specifications) “Specifications for the Construction of a 154’ LOA Passenger/Car Ferry For the Maine State Ferry Service”, dated February 27, 2009, and (Plans) Drawing No. 575-02-100, Title Sheet and Referenced Drawings. A copy of the Specifications is attached hereto and incorporated as part of this Agreement (APPENDIX G).
- B. If any discrepancy, difference or conflict is found to exist between the provisions of this Agreement and the Plans, then to the extent of such discrepancy, difference or conflict only, the provisions of this Agreement shall prevail; but in all other respects the Plans shall be in full force and effect.
- C. If any discrepancy, difference, or conflict is found to exist between (1) the Plans and (2) the Specifications, then to the extent of such discrepancy, difference, or conflict only, the Specifications shall prevail but in all other respects the Plans shall be in full force and effect. Any work called for by the Specifications and not shown on the Plans and any work shown on the Plans but not called for in the Specifications shall be performed by the Contractor as part of the contract work.

ARTICLE 3 - FEDERAL TRANSIT ADMINISTRATION (FTA) GRANT

This Agreement shall be subject to the provisions of the Federal Transportation Administration, Part II, Terms and Conditions of the United States of America, Department of Transportation, Federal Transportation Administration for Capital Grant Project No. ME-03-0045 (hereinafter “FTA Grant”) and any other FTA Grants which may be awarded during the term of this Agreement. A copy of the FTA Grant and future grants, including all special conditions enumerated by the Federal Transit Administration, is/are on file at the Owner’s Augusta Office and is incorporated, herein, by reference. Contractor agrees to conform to and abide by all other terms and conditions set forth by the Federal Government. The Contractor shall certify that it has read and agree to abide by the FTA Required Provisions (Appendix A) and the FTA Required Clauses (Appendix B)

ARTICLE 4 – OWNER’S REPRESENTATIVE

Owner’s Representative shall be vested with authority on behalf of Owner to give directions and to approve actions taken by Contractor in the performance of work under this Agreement. Owner shall designate the Owner’s Representative in writing, and shall deliver said writing to Contractor prior to commencement of work.

ARTICLE 5 – CONTRACT PRICE

- A. The total consideration for performance of this Agreement is: _____ (\$_____) (hereafter “Contract Price”) plus or minus any adjustments thereto made pursuant to the terms and conditions of this Agreement.
- B. This is a fixed price contract and is not subject to any fluctuation due to the exchange rates, increases in costs of labor, materials or equipment, etc. or any other reasons except any alteration agreed to in writing by the Owner and Contractor.
- C. The Owner is a governmental agency and as such is exempt from State of Maine sales tax. Any other sales taxes due to any other state and any other taxes or fees due to any federal, state, or local government or governmental agency shall be the responsibility of the Contractor.

ARTICLE 6 – COMPUTATION OF TIME

All periods of time under this Agreement shall be computed by including Saturdays, Sundays and holidays, except in the event that any such period terminates on a Saturday, Sunday, legal holiday, or other day observed as a holiday under the Contractor’s agreement with his production workers, such period shall be deemed extended to the next succeeding business day of the Contractor.

ARTICLE 7 - CONSTRUCTION SCHEDULE

- A. All work on the Vessel must be pursued by the Contractor with reasonable urgency and all facets of the construction and fitting-out operation shall occur at the earliest dates at which it is reasonable to do so to meet the Contract Delivery Date.
- B. The Contractor shall prepare, consistent with the Preliminary Master Construction Schedule provided as a part of Contractor’s bid as that preliminary Schedule may have been modified in subsequent negotiations with Owner, a final Master Construction Schedule and bar chart and shall submit same to the Owner within three (3) weeks of the date of the execution of this Contract. This Schedule shall cover all trades and shall highlight main equipment deliveries and key events in the progress of the work.

ARTICLE 8 – INSPECTION OF WORK AND APPROVAL OF PLANS

- A. All material, equipment and workmanship relative to the construction of the Vessel and Contractor's facilities shall be subject to inspection by Owner, the Owner's Representative or any governmental entity at any and all reasonable times during the performance of the work called for by this Agreement.
- B. All working drawings, shop drawings, blueprints, samples, working plans, progress photographs, progress reports, production schedules and other documentation required to be submitted in the Plans and Specifications shall be submitted to Owner or the Owner's Representative by Contractor. The review of those documents will be in accordance with the Maine Department of Transportation's Standard Specifications, Revision of December 2002, Section 105.7 Working Drawings.
- C. Owner or the Owner's Representative shall inspect all material, equipment and workmanship as set forth in the Plans and Specifications to determine whether same conform to the requirements of this Agreement and the Plans and Specifications. Owner or the Owner's Representative shall promptly reject all material, equipment and workmanship found not to be in conformance with the requirements of this Agreement or as otherwise set forth in the Plans and Specifications. All material, equipment and workmanship rejected by Owner or the Owner's Representative shall be corrected, repaired or replaced by Contractor at Contractor's expense to the satisfaction of Owner or the Owner's Representative.

ARTICLE 9 - OVERSIGHT

The accredited representatives of the Owner will oversee and may inspect, examine and test the work to be performed under this Contract. The Contractor shall provide access and customary telephone, fax, e-mail, administrative and other facilities during normal working hours, or at other times by arrangement, to the Naval Architect, the Owner's Representative, all other representatives of the Owner, regulatory authorities, surveyors, and to any other person for all necessary and reasonable purposes, to all premises where work under these presents is being carried out or components stored, including those of subcontractors. At all times and places where work is being carried out in accordance with this Contract, the Contractor shall have a responsible person to superintend the carrying out thereof (who may be an employee of the Contractor, or a supplier or subcontractor responsible to the Contractor), and any directions given in writing to such person shall be deemed to have been given to the Contractor, except that where variation to this Contract is involved, the procedure laid down elsewhere in this Contract shall be observed.

ARTICLE 10 – CHANGES IN CONTRACT DOCUMENTS

- A. Contractor shall not depart or deviate from the requirements of the Plans and Specifications for the Vessel without prior written authorization of Owner or the Owner's Representative.

- B. All changes to the Contract that affect compensation, time, or quality must be made by written Contract Modification. The Contract Modification will describe the underlying issue that resulted in the Contract Modification and will specify adjustments to compensation, time, or other Work requirements, as applicable. If adjustments to compensation or time are not shown on the face of the Contract Modification, then there are no such adjustments.

All Contract Modifications must be signed by the Contractor and the Owner, or the Owner's Representative. By signing a Contract Modification, the Contractor agrees to all the terms thereof and waives any and all claims for additional compensation, time, or other adjustments relating to the issue that is the subject of the Contract Modification.

ARTICLE 11 – EXTENSION OF TIME

- A. In the case of any delay in the delivery of the Vessel caused by any event beyond the control of the Contractor, a written "Notice of Delay" shall be given promptly by Contractor to Owner or the Owner's Representative. Said notice shall include the specific cause for the delay, any verification of said cause and the anticipated effect thereof. Said events shall include, without limitation, non-delivery or late delivery of material (but only if Contractor has ordered such material at proper times and has used every reasonable effort to obtain delivery thereof at the time required as determined by Owner's Representative), Acts of God (other than ordinary¹ storms or inclement weather conditions), landslide, earthquake, collision, explosion, lightning, flood, epidemic, fire, strike, lockout or other industrial disturbance, riot, insurrection, war, sabotage, vandalism, blockade, embargo, or delay of subcontractor due to any of such causes (unless the supplies or services to be furnished by the subcontractor were obtainable from other sources in sufficient time to permit Contractor to meet the required delivery schedule). Within ten (10) calendar days after such cause of delay has ceased to exist, or such longer period as Owner may permit, Contractor shall furnish to Owner a written statement of actual delay to Contractor resulting from such cause.
- B. On the basis of written notices, statements and any other information furnished to Owner by Contractor in regard to any delay enumerated above, in combination with information obtained by Owner or the Owner's Representative through independent sources, Owner and Contractor shall enter into good faith negotiations in an attempt to agree upon the number of calendar days, if any, the Contract Delivery Date of the Vessel shall be extended.

ARTICLE 12 – TESTS AND TRIALS

- A. The Contractor shall as soon as possible after the execution of this Contract submit to the Owner a complete schedule of all tests and trials (the "Schedule of Tests and Trials") to be carried out on the Vessel before the Vessel is declared to be ready for acceptance by the Owner. The Owner and the Naval Architect shall have the right to reasonably alter,

¹ Ordinary weather is defined as anything under gale force winds.

amend, extend or reduce the said Schedule of Tests and Trials to ensure compliance with this Contract and all applicable Governmental Rules, as of the effective date of this Agreement. Upon completion of all construction as set forth in this Agreement and the Plans and Specifications, the Contractor shall perform all tests and trials set forth in the Schedule of Tests and Trials, which shall include as a minimum all of the requirements set forth in Section 1.13 of the Plans and Specifications. All expenses of such tests and trials shall be borne by the Contractor except to the extent that Owner or the Naval Architect alter, amend or extend the Schedule of Tests and Trials beyond what is reasonably required for compliance with the Contract and applicable Governmental Rules or if the applicable Governmental Rules change subsequent to the effective date of this contract.

- B. If, during said tests and trials, the Vessel fails to meet any requirement of the Plans and Specifications or this Agreement, Contractor shall, after taking appropriate corrective action, subject the Vessel to further tests and trials sufficient to demonstrate compliance with this Agreement and the Plans and Specifications. The cost of all such additional tests and trials shall be borne by Contractor.

ARTICLE 13 – POST-TRIAL INSPECTION

After all tests and trials required by this Agreement and the Plans and Specifications have been completed, the Vessel shall be returned to the Shipyard, and in any case where the performance of said Vessel fails to meet any requirement contained in this Agreement and the Plans and Specifications, the Vessel and its equipment shall be opened up for post-trial inspection and examination as required by Owner or the Owner's Representative. All costs of the post-trial inspection shall be borne by Contractor, except to the extent that the Vessel's failure to meet the requirement of this Agreement is due to a defect in the Owner provided design or any owner provided items. Any defect in the material, equipment and workmanship provided by the Contractor; or defects resulting from Contractor-Provided Designs shall be remedied by Contractor at its expense, after which the machinery shall be closed and connected ready for service.

ARTICLE 14 – DELIVERY OF VESSEL

- A. When the Vessel has passed all tests and trials required by this Agreement and the Plans and Specifications is complete, or substantially complete as defined below, and after the Owner's Representative and the Naval Architect have jointly issued a certificate (Certificate of Completion of Tests and Trials) of such satisfactory completion it shall be delivered by Contractor and accepted by Owner at the Rockland Ferry Terminal in Rockland, Maine, free and clear of all liens except those in favor of a claimant arising out of the acts or omissions of Owner, with not less than five (5) days prior written notice to Owner of such delivery. "Substantially Complete" shall mean complete except for minor items not affecting safety, commercial utility or efficient operation of the Vessel. The parties may agree to stipulate damages in lieu of the Contractor completing such minor items and the Contract Price shall be adjusted accordingly by amendment to this Agreement.

- B. Owner shall furnish to Contractor at the time of delivery a Delivery Certificate accepting the Vessel.
- C. Such acceptance does not relieve the Contractor of any of its remaining responsibilities under these presents, but acknowledges that the construction, fitting-out, trials and delivery phases of the Contract have been satisfactorily concluded in all material respects.
- D. Furthermore, the Contractor will, before delivery is taken, undertake to give adequate familiarization courses in Rockland, Maine to the Owner's employees on the arrangements and working of the Vessel, her machinery and equipment.

ARTICLE 15 – MANUALS AND DOCUMENTS

- A. The Contractor shall ensure that the Owner is supplied with copies of all relevant instruction manuals and other documents required by the Contract Documents. The Contractor shall obtain at its expense and pass over to the Owner when delivery is taken of the Vessel, or on earlier request, the ship's papers, which shall include, as a minimum:
 - i. All documents and information of any description required by the Owner to enable the Owner to obtain a Certificate of Registry;
 - ii. All documents listed in Section 1.5 (Regulatory Body Requirements) and Section 1.15 (Documentation) of the Specifications.
 - iii. All As-Built Drawings.
- B. All Certificates and documents usually framed and mounted shall be so framed and mounted. Where any certificate, manual or document hereinbefore referred to is written in any language other than English, the Contractor shall provide at its expense a copy thereof translated into English by a person suitably qualified to carry out such translation.

ARTICLE 16 – CONTRACT DELIVERY DATE

The Vessel shall be delivered on or before _____. Such date shall be subject to adjustment pursuant to the terms and conditions of this Agreement.

There are no incentive payments for early completion. However, the Owner would accept earlier delivery dates.

ARTICLE 17 – GUARANTY

- A. Contractor guarantees to repair or replace to the reasonable satisfaction of Owner any defect in materials, equipment or workmanship provided by Contractor or any defect resulting from Contractor-provided Designs, which is discovered within twelve (12) months after such Vessel is delivered to Owner, provided that Owner shall within thirty (30) calendar days after discovery of such defect, provide written notice of claim for said

defect to Contractor. The Contract requirement of 12 months governs. Owner's failure to timely provide written notice of any defect to Contractor shall constitute a waiver of any and all claims arising out of such defect. With respect to Contractor's guaranty as set forth in this Article, the term "defect" shall not include defects resulting from design of the Vessel provided by the Owner in the Plans and Specifications or the following which may result from use of the Vessel during said guaranty period: (1) ordinary wear and tear; (2) misuse; (3) improper stowage or loading; and (4) negligence of Owner, its agents or employees or the operator or crew of the Vessel.

- B. The liability of the Contractor to the Owner hereunder on account of defects shall include the actual repair or replacement thereof. Any work required to be performed pursuant to the provisions of this Section shall be carried out, if practicable, at the shipyard of the Contractor or by the Contractor's own personnel at the Vessel's home port, or at a shipyard of the Contractor's choosing. If this causes undue delays or is not practical in Owner's sole discretion, then the Owner may have such work performed at any shipyard and in that event the Contractor shall be liable to the Owner for the documented expenses thereof at the commercial rate prevailing in such port area, including the cost of dockage of the Vessel, if necessary, with regard to the repair or correction of any defective workmanship or defective material, guaranteed hereunder. Contractor shall guarantee such repair or replacement for an additional period of ninety (90) days from the completion of such repair or replacement, unless such repair and replacement shall occur more than ninety (90) days prior to the expiration of the twelve (12) month guarantee period, in which case such repair or replacement shall be guaranteed until the end of said twelve (12) month period
- C. Prior to the expiration of the guaranty period, a final guaranty survey of the Vessel shall be conducted by Owner or the Owner's Representative. At such survey, Owner or the Owner's Representative shall inspect the Vessel for any defects. Such survey shall be held at such port as Owner shall designate. All material, equipment and workmanship guaranteed hereunder, which are found to be defective as a result of said inspection shall be corrected, repaired or replaced by Contractor at its expense to the reasonable satisfaction of Owner or the Owner's Representative. All corrections, repairs or replacements to be made pursuant to said final guaranty survey shall be performed as set forth in Section B of this Article. Owner shall give seven (7) calendar days prior written notice to Contractor of the time and place of the final guaranty survey, and shall give Contractor an opportunity to have a representative present during the survey.
- D. Any guaranties from subcontractors to Contractor in excess of the guaranty provisions of this Article shall be assigned by Contractor to Owner at the end of the guaranty period.
- E. The remedies contained in this Article 17 shall be Owner's sole and exclusive remedies for defects after delivery, whether under tort, contract, warranty or otherwise and no other guaranties or warranties, whether expressed or implied by law or otherwise are or will be deemed to have been made by contractor. All implied warranties, including warranties of merchantability or fitness for ordinary or intended use are specifically excluded. This guaranty is given in lieu of all other guaranties or warranties or actions in tort (including

negligence or strict liability) or contract against contractor. In no event shall contractor's aggregate liability (whether in warranty, tort or contract) exceed the contract price. In no event shall contractor be liable to owner for any incidental, punitive or consequential damages, including but not limited to, loss of use or loss of profits. Notwithstanding any provision contained herein, the Contractor shall remain liable for Liquidated Damages.

ARTICLE 18 – FINAL ACCEPTANCE

The Vessel shall be finally accepted (Final Acceptance) by Owner after the final guaranty survey if the Vessel is found by Owner or its Representative to have been constructed in conformity with this Agreement, the Plans and Specifications and any amendments thereto.

ARTICLE 19 – PAYMENT OF CONTRACT PRICE

This Article shall govern the payments for construction of the Vessel.

A. The Contract Price is payable as follows:

1. Fifteen percent (15%) of the Contract Price at the time that seventy-five percent (75%) of the structural steel is received in the shipyard.
2. Five percent (5%) of the Contract Price at the time of the keel laying.
3. Fifteen percent (15%) of the Contract Price at the time of installation of the main engines.
4. Fifteen percent (15%) of the Contract Price at the time of completion of the hull to the main deck.
5. Twenty percent (20%) of the Contract Price at the time of completion of the deck house.
6. Ten percent (10%) of the Contract Price at the time of launching of the Vessel.
7. Ten percent (10%) of the Contract Price at the time of delivery of the Vessel to Owner.
8. Five percent (5%) of the Contract Price upon submittal by the Contractor to the Owner of all plans, reproducibles, subcontractors' instruction books and all other data required to be so submitted to the Owner by the terms of this Agreement and the Plans and Specifications.
9. Five percent (5%) of the Contract Price at Final Acceptance (In accordance with Article 18) of the Vessel and upon satisfactory completion of the guaranty period and resolution of any other matters set forth in this Agreement.

B. Payment may be made in non-sequential order if the work required therefore is completed. No payments shall be made except on bills, vouchers or invoices submitted in such number or form and executed and attested in such manner as prescribed by Owner with respect to the payments to be made under Section A of this Article. No payment shall be made by Owner to Contractor until Owner is assured by Contractor that no liens upon the Vessel, material or equipment in favor of Contractor's workmen, materialmen are in existence.

- C. The making of partial payments pursuant to Section A of this Article shall in no way prevent Owner or the Owner's Representative from asserting any right or remedy accruing to them under this Agreement because of the failure of Contractor to perform the work or deliver the completed Vessel in accordance with the terms of this Agreement.
- D. When the Contractor considers that an installment payment is about to fall due, he will give the Owner fourteen (14) days notice thereof. The Contractor will then prepare an invoice, addressed to the Owner, with a copy to the Naval Architect and Owner's Representative who will, on being satisfied that the relevant stage has been reached, certify the same for payment and promptly advise the Owner accordingly. The Owner will settle a certified invoice in full within thirty (30) days of receipt, except that the **final** payment will be reduced because of any guarantee costs incurred by Owner.

All payments made by the Owner to the Contractor are so made strictly on the condition that all sums due by the Contractor to its suppliers and subcontractors are promptly and fully paid. Owner reserves the right to request executed waivers of liens and other claims of any or all such suppliers and subcontractors as a condition of making any of the required payments.

ARTICLE 20 – VALUE ENGINEERING

- A. Contractor may submit to Owner written proposals for modifying the Plans and Specifications for the purpose of reducing the total cost of construction of the Vessel. The proposals shall be identified as Value Engineering Proposals, hereafter "V.E. Proposals". Such V.E. Proposals shall contain the following information.
 - 1. A description of the proposed change, with specific reference to the pertinent existing requirements in the Plans and Specifications;
 - 2. A detailed estimate of the cost of performing the work under the existing requirements and under the proposed change;
 - 3. The date by which Owner must approve or disapprove the proposed change.
- B. Owner shall be the sole judge of both the technical acceptability of each V.E. Proposal and the estimated net savings to be derived therefrom. Owner may reject each V.E. Proposal in writing within the time specified by Contractor in said Proposal. If Owner does not approve any V.E. Proposal within the time so specified, said V.E. Proposal shall be deemed to be rejected. Any determination made by Owner pursuant to this Article shall not be subject to the provisions of Article 24 (Dispute Resolution).
- C. In the event Owner accepts any V.E. Proposal, such acceptance shall be evidenced by a written Change Order which states that said Order is made pursuant to this Article. Said Change Order shall provide for a reduction in the Contract Price to the extent of fifty percent (50%) of the net cost decrease and any change upon the Contract Delivery Date. Such an Order shall constitute an amendment to this Agreement.

- D. Until a Change Order incorporating any V.E. Proposal has been executed, Contractor shall continue to perform the work in accordance with the existing requirements of this Agreement and the Plans and Specifications.
- E. The delivery date shall not be extended by Owner's acceptance of Contractor's V.E. Proposal unless such extension is specifically provided for in the Change Order. Owner reserves the right to adopt any V.E. Proposal under this Agreement for general use on other contracts administered by Owner.

ARTICLE 21 – LIQUIDATED DAMAGES

In the event Contractor fails to deliver the Vessel on or before the Contract Delivery Date or any extension thereof, Contractor shall pay to Owner as liquidated damages, and not as a penalty, the following amounts for each calendar day or part thereof elapsing from said Contract Delivery Date (In Accordance with Article 16) to the date upon which the Vessel is actually delivered:

- A. Five Hundred Dollars (\$500.00) for each calendar day for the first 100 days,
- B. One Thousand Dollars (\$1,000.00) for each calendar day for the next 100 days,
- C. One Thousand Five Hundred Dollars (\$1,500.00) thereafter.

These liquidated damages which the parties each believe to be reasonable, are not set as a penalty for the Contractor's breach, should one occur, nor are they intended to be a windfall to the Owner. The amount fixed herein between the parties is a reasonable forecast of the amount necessary to justly compensate the Owner for the loss occasioned by the Contractor's breach of delivery.

In the event that liquidated damages exceed 10% of the contract price, the parties agree that this provision may be revised.

ARTICLE 22 – DEFAULT OF CONTRACTOR

- A. The following circumstances shall constitute default of Contractor under this Agreement:
 - 1. The failure of Contractor to make delivery of the Vessel and its materials, fittings, equipment and supplies, and failure to perform the services required under this Agreement within the time specified herein or any extension thereof;
 - 2. The failure of Contractor to perform any of the other provisions of this Agreement or failure to make progress such that performance in accordance with its terms is endangered. Such failure may include, but is not limited to, failure to make timely payment for all labor, materials, services and other charges which are to be paid by Contractor;
 - 3. The dissolution of Contractor or the adjudication of Contractor as a bankrupt; the making of a general assignment by Contractor for the benefit of creditors; the appointment of a receiver of any kind whatsoever, temporary or permanent, for the property of Contractor; or the filing of a petition for reorganization with

reference to Contractor, whether by Contractor, its creditors, stockholders or any other person whatsoever; or

- B. Where the failure of Contractor to comply with the provisions of this Agreement arises out of Acts of God or other events beyond the control of Contractor as contained in Article 22, Section A above, such failure shall not be considered default under this Article.
- C. In the event of default by Contractor as defined in Section A of this Article, Owner may terminate this Agreement in whole or in part. Upon such termination, Owner shall give written Notice of Default to Contractor. Owner shall give Contractor fifteen (15) calendar days from the receipt of such Notice the opportunity to cure only such failure as set forth in Section A (2) of this Article in a manner satisfactory to Owner.
- D. In the event that Owner terminates this Agreement in whole or in part as provided in Section C of this Article, Owner may procure the Vessel, supplies or services similar to those terminated. Contractor shall be liable to Owner for any reasonable and documented costs for such similar Vessel, supplies or services which are in excess of the Contract Price or that portion of the Contract Price attributable to the part of the contract work performed by one other than Contractor. Contractor shall continue to perform the contract work to the extent said work is not terminated pursuant to this Article.
- E. If this Agreement is terminated by Owner under this Article, Owner may require Contractor to transfer title (insofar as not previously transferred) and deliver to Owner, in the manner and to the extent directed by Owner, the completed Vessel or the Vessel as partially completed and all supplies, materials, spare parts, tools, dies, jigs, fixtures, plans, drawings, information and contract rights as Contractor has constructed, produced or acquired for the portion of this Agreement subject to termination. Owner shall require Contractor to protect and preserve property in possession of Contractor in which Owner has an interest. Owner shall pay to Contractor an amount commensurate with Contract Price, less the contract value of the terminated work, less all previous payments made under Article 19 (Payment of Contract Price), and an amount to be agreed upon by Contractor and Owner for the protection and preservation of property.
- F. In the event Owner terminates this Agreement under this Article and elects to have the contract work completed by another, Contractor shall, at Owner's direction, assign such subcontracts and orders for materials, equipment, services and supplies to be used in the performance of said contract work to Owner.
- G. In the event that Owner terminates this Agreement under this Article and elects not to have the contract work completed, Owner may, within one hundred twenty (120) calendar days from the date of termination, sell the partially completed Vessel, work-in-process, materials, machinery, fittings, equipment and supplies to which Owner has title, together with all plans, specifications, calculations and other records required for the contract work. Such sale shall be made free from any equity of redemption and may occur without any appraisal or valuation at the option of Owner. The purchaser at such

sale shall be given reasonable time, not to exceed forty-five (45) days, within which to remove the Vessel and other property purchased from the plant of Contractor. Owner may become a purchaser at such sale. The proceeds of the sale shall be applied in the following order of priority: first, to satisfy all costs and expenses, including reasonable attorneys fees incurred by Owner or its assigns in making such sale; second, to reimburse Owner for payments already made by Owner to Contractor; and third, to pay damages, demands or deficiencies arising by reason of the default of Contractor. The remaining proceeds, if any, shall be paid over to Contractor. In the event that the proceeds of such sale are not sufficient to pay the above priority items, the Contractor or its surety or sureties shall pay Owner all such deficiencies.

- H. The rights conferred upon Owner under the terms of this Article shall be in addition to any rights which Owner would have at law or equity upon default of Contractor. The failure of Owner to exercise any rights contained in this Article shall not constitute a waiver of Owner's right to subsequently terminate this Agreement as set forth in Article 23 (Termination for Convenience of Owner).

ARTICLE 23 – TERMINATION FOR CONVENIENCE OF OWNER

Notwithstanding Article 22 (Default of Contractor) of this Agreement:

- A. Performance of work under this Agreement may be terminated by Owner in whole or in part whenever Owner determines for any reason that termination is in the best interest of the State of Maine. Such determination shall not be subject to Article 24 (Dispute Resolution). Any such termination shall occur by Owner's delivery to Contractor of a Notice of Termination specifying the extent to which performance of work under this Agreement is terminated and the date on which termination becomes effective. Upon receipt of a Notice of Termination and except as otherwise directed by Owner, Contractor shall:
1. Stop work to the extent specified in the Notice of Termination;
 2. Place no further orders or subcontracts for materials, equipment, services or facilities except as may be necessary for completion of such portion of the work which is not terminated;
 3. Terminate all orders and subcontracts to the extent that they relate to the performance of work terminated by the Notice of Termination;
 4. Assign to Owner all rights, title and interest of Contractor under any orders or subcontracts so terminated, in the manner, at the times and to the extent directed by Owner;
 5. Settle all outstanding liabilities and claims arising out of such termination of said orders and subcontracts to the extent that Owner may require and with the approval or ratification of Owner, which shall be final;
 6. Transfer title (to the extent that title has not already been transferred to or vested in Owner) and deliver to Owner, in the manner, at the times and to the extent directed by Owner the following:

- a. the fabricated or unfabricated parts, work-in-process, completed work, supplies and other material produced as a part of or acquired in connection with the performance of the work terminated by the Notice of Termination; and
 - b. the completed or partially completed plans, drawings, information and other property which, if this Agreement had been completed, would have been required to be furnished to Owner.
7. Use its best efforts to sell, in the manner, at the times, to the extent and at the price or prices directed or authorized by Owner, any property of the types referred to in Section A(6) of this Article; provided, however, that Contractor:
- a. shall not be required to extend credit to any purchaser; and
 - b. may purchase any such property under the conditions prescribed by and at the price or prices approved by Owner.
8. Take such action as may be necessary, or as Owner may direct, for the protection and preservation of the property related to this Agreement which is in the possession of Contractor and which Owner has acquired or may acquire an interest.

Within sixty (60) calendar days of receipt of the Notice of Termination, Contractor shall submit to Owner a list, certified as to quantity and quality, of any or all items not previously disposed of, exclusive of items the disposition of which has been directed or authorized by Owner, and may request that Owner remove or enter into a storage agreement for such items. Within forty-five (45) calendar days of receipt of such list, Owner shall remove or enter into a storage agreement for said items. The list submitted shall be subject to verification by Owner upon removal of the items. If the items are stored, such verification shall occur within thirty (30) calendar days from the date of the storage agreement. Any necessary adjustments to correct the list as submitted shall be made prior to final settlement.

- B. After receipt of a Notice of Termination, Contractor shall submit to Owner in writing its final claim for any and all amounts that the contractor asserts are due under the Contract, in the form and with the certification if any is prescribed by Owner. Such claim shall be submitted promptly, but in no event later than one (1) year from the effective date of termination, unless extended in writing by Owner within such one (1) year period or any authorized extension thereof. However, Owner may determine that facts justify receipt of such final claim at any time after such one (1) year period or any extension thereof. Upon failure of Contractor to submit its final claim within the time allowed, Owner may determine, on the basis of information available to it, the amount that is due and shall thereupon pay to Contractor said amount.
- C. Contractor and Owner may agree upon any or all amounts to be paid to Contractor by reason of the total or partial termination of work pursuant to this Article, which may include a reasonable allowance for profit on work done. Such agreement shall be

memorialized in a written amendment to this Agreement. The parties may stipulate that this Agreement constitutes a full and final settlement of all amounts owed under this Agreement.

- D. In the event of the failure of Contractor and Owner to agree as provided in Section C of this Article on the amount to be paid Contractor, Owner shall determine the amount, if any, due Contractor based upon the following:
1. For completed contract work accepted by Owner (or sold or acquired as provided in Section A (7) of this Article) and not paid for, a sum equivalent to the aggregate price for such contract work computed in accordance with this Agreement;
 2. The total of:
 - a. The costs incurred in the performance of the contract work terminated, including initial costs and preparatory expenses allocable thereto, but exclusive of any costs attributable to contract work paid or to be paid for under Section D (1) of this Article; and
 - b. The cost of settling and paying claims arising out of the termination of work under subcontracts or orders, as provided in Section A (5) of this Article, which are properly chargeable to the terminated portion of this Agreement, but exclusive of amounts paid or payable on account of contract work or materials delivered or services furnished by subcontractors or vendors prior to the effective date of the Notice of Termination, which amount shall be included in the costs payable under Section 2 (a) of this Article; and
 - c. The reasonable costs of settlement, including accounting, legal, clerical and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of this Agreement and for the termination and settlement of subcontracts thereunder, together with reasonable storage, transportation and other costs incurred in connection with the protection or disposition of property allocable to this Agreement.
 3. The total sum to be paid Contractor under Sections D(1) and D(2) of this Article shall not exceed the total Contract Price as reduced by the amount of payments otherwise made and as further reduced by the Contract Price of work not terminated. Except for normal spoilage, and except to the extent that Owner shall have otherwise expressly assumed the risk of loss, there shall be excluded from the amounts payable to Contractor as provided in Sections D(1) and D(2)(a) of this Article, the fair value, as determined by Owner, in connection with materials, equipment, fittings and supplies which are destroyed, lost, stolen or damaged so as to become undeliverable to Owner or to a buyer pursuant to Section A(7) of this Article.
- F. In arriving at the amount due Contractor under this Article, there shall be deducted:

1. All advances or other payments on account made to Contractor,
 2. Any liquidated or finally determined claim which Owner may have against Contractor in connection with this Agreement, and
 3. The agreed price for or the proceeds from sale of any materials, equipment, supplies or other items acquired by Contractor or sold pursuant to the provisions of this Article and not otherwise recovered by or credited to Owner.
- G. If the contract work is partially terminated, Contractor may file with Owner a request in writing for an equitable adjustment of the Contract Price relating to the non-terminated portion of this Agreement prior to the settlement of the terminated work.
- H. Owner may from time to time, under such terms and conditions as it may prescribe, make partial payments and payments on account against costs set forth in Sections 2(a) and 2(b) of this Article whenever, in the opinion of Owner, Contractor is entitled to such payments. If the total of such payments is in excess of the amount finally agreed or determined to be due under this Article, such excess shall be payable by Contractor to Owner upon demand.
- I. Contractor shall preserve and make available to Owner all books, records, documents and other evidence bearing on the costs and expenses of Contractor under this Agreement and relating to the work terminated hereunder pursuant to Article 40 (Compliance with Laws)

ARTICLE 24 – DISPUTE RESOLUTION

Unless expressly stated otherwise in this Agreement, any action, omission, direction, decision, interpretation or determination of Owner, its Representative, or Contractor may be the subject of a dispute. Any dispute arising under this Agreement must be raised in a timely manner. The parties shall negotiate in good faith to resolve any disputes arising in connection with this agreement. The Contractor must first informally negotiate with the Project Manager to resolve the dispute within 15 days of the date when the dispute becomes apparent to the Contractor. In the event that the parties are unable to amicably resolve the dispute through informal negotiations, the dispute shall be submitted to an arbitrator (hereafter “Arbitrator”) from the American Arbitration Association, and who has been approved by Owner and Contractor. All rules of the American Arbitration Association shall apply. Arbitrator shall reduce his decision in writing and shall mail or otherwise furnish a copy thereof to Owner, the Owner’s Representative, and Contractor.

Regardless of the status or disposition of any dispute, the Contractor and the Owner must perform their contractual responsibilities promptly and diligently. Unless expressly directed otherwise by the Owner, the Contractor shall proceed without delay to perform the work or to conform to the decision or order of the Owner.

ARTICLE 25 – INSURANCE**A. Insurance and Loss.**

1. The Contractor shall at its own cost fully insure and keep insured in the joint names of the Owner and the Contractor the Vessel and the machinery, materials and things used or intended for use in the construction and outfit thereof equivalent to the value of these or a sum of not less than the total of installments paid by the Owner plus ten per cent (whichever is greater). Further, the Contractor shall at its own cost fully insure and keep insured in the joint names of the Owner and the Contractor all modifications, spare parts, and additional equipment provided by the Owner as may be agreed upon from time to time during the construction of the Vessel.
2. All Insurance Policies shall be placed with an insurance company or companies licensed or approved by the State of Maine, Department of Business Regulation, Bureau of Insurance, to do business in the State of Maine. Contractor shall provide Owner with Certificates of Insurance accompanied by the copies of the related policies. Said insurance policies shall protect the Vessel against losses resulting from fire, launching and all other risks, accidents and damages (excluding War Risks) during and after the construction of the Vessel, whilst she remains in the harbor or the port of construction, when she is engaged on, or in connection with, any trials or delivery made under this Contract and until the time the Vessel is delivered to the Owner. The Contractor shall from time to time renew the said insurance policies prior to their expiration and shall pay and continue to pay all premiums that become payable in respect of such insurance. Within seven days from the date when such renewed insurance becomes effective, or the premium paid, the Contractor shall deliver to the Owner certificates that prove the policy or policies of insurance have been purchased. If, however, the Contractor defaults on such insurance, fails to keep up the said insurance or fails to obtain any such renewal of insurance as aforesaid, then the Owner shall be at liberty to procure insurance and thereupon the Contractor shall repay to the Owner the amount of the premiums paid, or the Owner shall be at liberty, at its option, to deduct the amount thereof from any sums payable to the Contractor under this Contract. Nothing herein contained nor anything done or omitted to be done by the Owner in pursuance thereof shall diminish or affect the Contractor's obligation to keep the Vessel, machinery, material and things insured to the full amount of their value in accordance herewith until the vessel is accepted, nor shall it diminish or affect the liability of the Contractor in respect thereof. All such policies shall name the Owner as additional insured and shall be non-cancelable except on ten (10) days prior written notice to the Owner.
3. If any event shall happen giving rise to a claim under any insurance policy to be effected under this Section, or if the Vessel shall become a total or constructive total loss before Acceptance by the Owner, the Owner (without prejudice to its rights to have this Contract performed within such extended time and at such price as may be mutually agreed) shall receive the moneys which shall become

payable under whichever of the policies the claim shall arise and retain the same, paying the Contractor the difference between the aggregate of such sums as they may have previously paid the Contractor under this Contract and such total amount as the Naval Architect may certify would have been payable to the Contractor if this Contract had been terminated at the time of the event giving rise to the claim. The Owner may, at its discretion, instruct the Contractor to arrange War Risk insurance, and the Contractor is then obliged to do so without delay, but all costs involved are at Owner's expense.

B. Termination.

In the event the Contractor defaults on such insurance, fails to maintain the insurance or fails to obtain any renewal of insurance as aforesaid, the Owner may terminate this contract for construction of any further portion of the Vessel and the Owner shall not be obligated to pay any damages or additional money to the Contractor pursuant to this Contract.

ARTICLE 26 – SURETY

A Performance and Payment Bonds

Contractor agrees to furnish Owner, within 15 days of the execution of this Agreement, the following bonds upon which Contractor and its surety or sureties are jointly and severally bound to Owner. The identities of the sureties must be satisfactory to Owner. Sureties offered for bonds must appear on the list contained in the Beneficiary of Treasury Circular 570, “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and Acceptable Reinsuring Companies. The form and sufficiency of the surety or sureties shall be satisfactory to Owner and the final execution of the contract shall be contingent on an agreement as to the amounts for both the performance and payment bonds as set forth below:

1. A Performance Bond in the sum of 100% of the Bid amount conditioned upon the well and true performance and fulfillment of all undertakings, covenants, terms, conditions and provisions of this Agreement during its original term and any extensions, amendments or modifications thereof that may be granted by Owner or the Owner’s Representative, with or without notice to the surety and during the life of any guaranty required under this Agreement.
2. A Payment Bond in the sum of 100% of the Bid amount conditioned upon Contractor making prompt payment to all persons supplying Contractor or its subcontractors of any tier with labor, materials, equipment and supplies in the performance of the work provided for in this Agreement during its original term and any extensions, amendments or modifications thereof that may be granted by Owner or the Owner’s Representative, with or without notice to the surety, subject to §115e of Part II of the FTA Grants.
3. All Bids must be accompanied by a Bid Bond that complies with Maine DOT’s Standard Specifications. Bids must be accompanied by a Bid Bond at 5% of the bid amount or the amount specified in the Notice to Contractors. It can be in the form of an official bank check, cashier’s check, certified check, certificate of deposit, or

United States postal money order payable to Treasurer, State of Maine as a Bid guarantee.

Please note: the Department will now additionally accept a facsimile of the Bid Bond (for either electronic or paper bids); however, the original Bid Bond must then be received at the MDOT Contract Section within 72 hours after the bid opening. Firms should fax their Bid Bonds to the Contracts Section at 624-3431.

If any surety upon any bond furnished under this Article becomes unacceptable to Owner or if any surety fails to furnish information as to its financial condition from time to time as required by Owner, Contractor shall promptly furnish such additional security as may be required by Owner to protect the interests of Owner and of persons supplying Contractor or its subcontractors of any tier with labor, materials, equipment or supplies in the performance of the work covered by this Agreement.

B Letter Of Credit

In the absence of a payment and performance bond, Owner may consider as an alternative the issuance to Owner a standby letter of credit (L/C) in a form acceptable to Owner issued by a federally insured financial institution rated investment grade or higher by a recognized commercial rating service. The L/C shall be irrevocable, require presentation of no document other than a written certificate of Owner, a sight draft and the original L/C to the issuing financial institution, and shall expire only as provided below.

If the Contractor does not furnish an acceptable replacement L/C, or other acceptable substitute, at least 30 days before the L/C's scheduled expiration, the Owner may immediately draw on the L/C.

The L/C shall remain in effect until the later of 60 days following final payment or the expiration of any warranty period. The L/C shall provide that, unless the issuer provides the beneficiary written notice of non-renewal at least 60 days in advance of the current expiration date, the L/C is automatically extended without amendment for one year from the expiration date, or any future expiration date, until the period of required coverage is completed and the Owner provides the financial institution with a written statement waiving the right to payment.

ARTICLE 27 – INDEMNIFICATION

Contractor shall indemnify, defend and hold harmless Owner, its employees and agents, the Owner's Representative and the Vessel against any and all claims, actions, causes of action, demands, losses, penalties and damages of any nature whatsoever, arising from any direct or indirect act, omission, neglect, or default of Contractor, its agents and employees, subcontractors or their agents and employees, including any and all actions for contribution and/or indemnity, any and all claims arising from injury to or death of employees, workmen, trespassers, licensees and all other persons, whether in, on or about the contract work, and any and all claims arising from damage to or loss of property of third parties due to, including reasonable attorneys fees. It is agreed that the workmen and employees engaged in the construction of the Vessel shall at all

times be employees of Contractor or its subcontractors and shall not be the employees of Owner or the Owner's Representative. This agreement of Contractor to indemnify, defend and hold harmless shall not apply to any injury to, or death of, any person, or to any damage to or loss of property of third parties occurring after delivery of the Vessel to the Owner; except, that said indemnification shall be applicable to such injury, death or damages occurring during the period or periods the Vessel is in Contractor's Shipyard or under Contractor's contract work supervision for the performance of work or repairs required by Articles 13 (Post Trial Inspection) and 17 (Guaranty). Any death after delivery of the Vessel caused by an injury occurring before such delivery due to any direct or indirect act, omission, neglect or default of Contractor, its employees, its subcontractors or their employees shall not be excluded from the indemnity provisions provided for under this Article solely for the reason that such death occurred after delivery of the Vessel. This indemnification does not extend to a claim that results solely and directly from (a) the Owner's negligence or unlawful act, or (b) action by the Contractor taken in reasonable reliance upon an instruction or direction given by an authorized person acting on behalf of the Owner in accordance with the contract.

ARTICLE 28 – TITLE

Title to the Vessel under construction and title to materials, machinery, equipment, fittings and supplies delivered, bought or ordered for use in the construction of said Vessel shall vest in Owner to the extent of any payments made thereon, at the point when such materials, equipment, fittings and supplies are delivered to Contractor's plant or other place of storage located elsewhere and approved by Owner. Accumulated payments by Owner to Contractor under Article 19 (Payment of Contract Price) shall be deemed sufficient to cover the value of all material, machinery, equipment, fittings and supplies located at the Contractor's plant or in storage elsewhere, provided, however, that the risk of loss or damage to such materials, machinery, equipment, fittings and supplies and the Vessel itself shall remain with Contractor, and Owner shall not be deemed to have waived the right to require Contractor to repair or replace defects at Contractor's expense and to deliver the Vessel with all contract work completed as required by this Agreement. Contractor shall have equity in such materials, machinery, equipment, fittings and supplies and completed contract work to the extent not paid for by Owner. Owner may, by written direction, require that title vest in Owner upon delivery of such materials, machinery, equipment, fittings and supplies to the carrier for transportation to Contractor's plant or other place of storage. Title to all scrap material and to all material which is surplus to the requirements of this Agreement shall vest in Contractor.

Notwithstanding the provisions of this Article, Contractor shall be subject to the risk of loss of the Vessel and all materials, machinery, equipment, fittings and supplies until the Vessel is delivered to Owner in accordance with Articles 14 (Delivery of Vessel) and 16 (Contract Delivery Date).

Contractor shall procure a release(s) from any party holding a UCC security interest or other liens covering the Vessel, all materials, supplies and parts which are used or intended to be used for the construction of the Vessel and any insurance proceeds (the "Owner's Property").

Without impairing or releasing the title vested in Owner, in order to fully ensure that title to the Owner's Property for which Owner has paid rests with Owner, this Agreement shall also be constitute the grant by Contractor of a UCC security interest to Owner covering the Owner's Property.

Contractor hereby irrevocably authorizes Owner from time to time to file in any Uniform Commercial Code jurisdiction any initial financing statements and amendments or addendums thereto that: (a) indicate the Owner's Property is the property of Owner; and (b) contain any other information required by Part 5 of Article 9 of the applicable Uniform Commercial Code for the sufficiency or filing office acceptance, including (i) whether Contractor is an organization, the type of organization and any organization identification number issued to the Contractor. Contractor agrees to furnish any such information to Owner promptly upon request.

Contractor covenants with Owner that without providing at least 30 days prior written notice to Owner, (a) Contractor will not change its name, its place of organization or incorporation or, its mailing address or organizational identification number if it has one, (b) if Contractor does not have an organizational identification number and later obtains one, Contractor shall forthwith notify Owner of such organizational identification number, and (c) Contractor will not change its type of organization, jurisdiction of organization, or other legal structure without Owner's prior written consent.

Contractor will promptly execute any financing statements or other instruments deemed necessary by Owner to prevent any filed financing statement from becoming misleading or losing its perfected status. The information contained in this Section is provided in order that this Agreement shall comply with the requirements of the Uniform Commercial Code, as enacted in the in which the Vessel is being constructed, for instruments to be filed as financing statements.

The remedies for any violation of the covenants, terms and conditions of the security agreement herein contained shall be (i) as prescribed herein, or (ii) as prescribed by general law, or (iii) as prescribed by the specific statutory consequences now or hereafter enacted and specified in said Uniform Commercial Code, all at Owner's sole election. Contractor and Owner agree that the filing of such financing statement(s) shall never be construed as in any wise derogating from or impairing the Owner's title to the Owner's Property.

ARTICLE 29 – RIGHTS TO THE DESIGN AND DRAWINGS

No part of the plans or drawings or other relevant information is to be made available by the Contractor to any other party, except as required to fulfill the contract obligations, without the prior written approval of Owner and Naval Architect. The Contractor shall not use, or allow the use of, all or any portion of the design of the vessel, or of all or any portion of the Specifications, Plans, or Drawings (including but not limited to the Bid Documents and the As-Built Drawings), without the prior written approval of both the Owner and Naval Architect, which approval can be withheld for any or no reason.

ARTICLE 30 – LIENS

- A. At the time Contractor requests any payment under this Agreement, Contractor must give written guaranty to Owner that the Vessel, its materials, equipment, fittings and supplies and every part thereof is free and clear of any and all liens or rights in rem of any kind, except such liens in rem arising of Owner's other contractors, suppliers and materialmen, or arising as a result of Owner's default in payment to Contractor. Contractor shall furnish evidence satisfactory to Owner that the Vessel, materials, equipment, fittings and supplies are free and clear of such liens or rights in rem.
- B. If such a lien or right in rem as Contractor is required to guaranty against hereunder is filed or asserted against or attached upon the Vessel, any materials, equipment, fittings or supplies, Contractor shall promptly notify Owner of such lien or right in rem and shall no later than fifteen (15) calendar days thereafter secure the discharge or release of such lien or right in rem. If such release or discharge is not available under the law, Contractor shall immediately take such steps as in the opinion of Owner shall prevent such lien or right in rem from delaying the contract work, and shall indemnify and hold harmless Owner from all costs, charges and damages by reason of such lien or right in rem.
- C. Owner, at its option, may satisfy the claim upon which such lien or right in rem as Contractor is required to guaranty against hereunder is based in order to secure its discharge or release. In such event, Owner shall deduct such sum from any payments due or to become due Contractor. In the event that the cost of satisfying such lien or right in rem is in excess of the amount which is due or to become due Contractor, Contractor shall pay the amount of such excess to Owner upon demand.
- D. Owner may also, at its option, without securing the discharge or release of such lien or right in rem as provided in paragraph C above, withhold any payments due or to become due Contractor in an amount which is determined by Owner to be required to secure the release or discharge of such lien or right in rem, which amount shall include the estimated amount of all expenses reasonably expected to be incurred by Owner in connection therewith; provided, however, that Contractor has not released or discharged such lien or right in rem.

ARTICLE 31 – TAXES

Contractor shall pay all United States, State, County, City, sales, use, excise or other taxes, assessments and duties lawfully assessed or levied prior to or concurrently with delivery of the Vessel against the Vessel and materials, equipment, fittings and supplies either to be used or actually used in the performance of this Agreement. All questions on the State of Maine taxes may be addressed to:

State of Maine
Department of Administrative & Financial Services
Maine Revenue Services
24 State House Station

Augusta, Maine 04333-0024
Telephone: 207-287-2076

ARTICLE 32 – PATENT INFRINGEMENT

Contractor shall be responsible for any and all claims against Owner or Vessel for infringement of patents or patent rights in the construction or use of the Vessel arising out of Contractor's workmanship, materials, equipment and Contractor-Provided Designs. Contractor shall defend, hold harmless and indemnify Owner, the Owner's Representative and the Vessel against all such patent claims and all costs, expenses, charges and damages which Owner, the Owner's Representative or the Vessel may be obligated to pay by reason of such patent claims, including all expenses of litigation and reasonable attorney's fees. Owner shall notify Contractor promptly of any patent claim or any suit brought in connection therewith, and shall give Contractor an opportunity to defend against such suit. Owner shall make no payment on account of any patent claim or suit in connection therewith, unless either with the consent of Contractor or pursuant to the decree of a proper court or tribunal. Contractor shall not be responsible for any patent claim or claim for indemnity arising in connection therewith, which arises out of or in connection with the design of the Vessel or any Owner-Provided Plans

The Contractor shall pay all royalties on patented articles, import duty, and other taxes.

ARTICLE 33 – LABOR PROVISIONS

This Agreement is controlled by the labor provisions in §115a (1) (a) through (g) of Part II of the Terms and Conditions of the FTA Grants.

ARTICLE 34 – EQUAL OPPORTUNITY PROVISIONS

Contractor shall comply with the equal opportunity provisions set forth in Appendix A, FTA Required Provisions, I. Civil Rights Requirements; Appendix B, FHWA Required Provisions; Appendix D, Other Governmental Rules; Appendix F, Special Provisions and Part II of the Terms and Conditions of the FTA Grants.

ARTICLE 35 – PLANT PROTECTION

Contractor shall provide safeguards for its plant and the work in process under this Agreement, including devices, equipment and personnel as would constitute reasonable protection against all hazards, including unauthorized entry, malicious mischief, theft, vandalism and fire.

ARTICLE 36 – BUY AMERICA ACT

- A. Contractor agrees that only (a) such unmanufactured articles, materials and supplies (hereinafter "Supplies") as have been mined or produced in the United States, and (b) such manufactured supplies as have been manufactured in the United States substantially all from supplies mined, produced or manufactured in the United States shall be used in

the construction of the Vessel under this Agreement. The requirements are set forth in; Appendix B, 2. Buy America Requirements, and APPENDIX C, Section 3 - Other Federal Requirements. The Contractor must fill out a "Buy America Certificate" which is provided in APPENDIX B of this Agreement. The requirements of this Article and the Buy America Act shall not apply if Owner or the Owner's Representative determines that, in respect to particular supplies, it is impractical to enforce such requirements or that it would unreasonably increase the cost of construction of the Vessel under this Agreement and if a waiver is requested and approved from FTA Headquarters. In the event Owner or the Owner's Representative makes such a determination, an exception shall be noted in the Plans and Specifications as to that particular supply and a written record made of the findings upon which such exception is justified.

- B. If the Contractor certifies compliance with Buy America, it shall submit documentation which lists 1) component and subcomponent parts of the Vessel to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the component or subcomponent of the Vessel, including a description of the activities that will take place at the final assembly point and the cost of final assembly.

ARTICLE 37 – RECORDS

- A. Contractor shall maintain all reports, records and information required under this Agreement. The records, reports and information shall be maintained until the expiration of six (6) years following either the date of final payment or effective date of termination.
- B. Records shall include but not limited to records showing the cost of performance of this Agreement and of any termination of work thereunder. Such records shall include all books, records, documents, ledgers and all other writings related to the contract work set forth in this Agreement and all costs and expenses associated thereto, and may, to the extent approved by Owner, consist of photographs, microfilm, microfiche or other authentic reproduction.
- C. Contractor shall make such records available for inspection by and without charge to Owner or the Owner's Representative at all reasonable times at the office of Contractor. Contractor's method of accounting shall be subject to the approval of Owner or the Owner's Representative, but no material change shall be made therein if said method conforms to good accounting practice.

ARTICLE 38 – ACCESS TO REPORTS AND RECORDS

- A. Contractor agrees that the Owner, shall, for the purpose of audit and examination, be permitted to inspect all work, materials, payrolls, reports, records, information and other data with regard to the project. The Contractor shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Owner, the Owner's Representative, the Comptroller General of the United States, the Treasurer of the State of Maine, all state and federal agencies involved in this project, or

any of their duly authorized representatives, to be pertinent to ascertain compliance with the requirements of this Agreement. The Contractor shall provide all information, records and reports required in this Agreement without charge to the Owner.

- B. Contractor agrees to maintain all required records until the expiration of six (6) years following either the date of final payment or effective date of termination, and all other pending matters are closed.

ARTICLE 39 – APPLICABILITY TO SUBCONTRACTORS

Contractor shall provide copies of this Agreement, the approved Plans and Specifications, and any other relevant documentation to each subcontractor performing any work, or providing any materials, equipment, fittings or supplies in the construction of the Vessel prior to the execution of any subcontract hereunder. Contractor may alternatively provide each subcontractor the opportunity to review any of the above documents prior to said execution. Contractor shall hold each subcontractor responsible for any relevant provisions contained in any of the documents set forth herein.

ARTICLE 40 – REPORT OF SUBCONTRACTING

Upon delivery of the Vessel to Owner, Contractor shall submit to Owner or the Owner's Representative, in writing, an accounting of the total dollar amount of all subcontracts and purchase orders placed by it under this Agreement with organizations not affiliated with it. Said writing shall include an itemized list of each subcontractor who performed work on or provided services, materials, equipment, fittings and supplies for the Vessel prior to delivery to Owner and the final cost to Contractor of the services, materials, equipment, fittings and supplies provided by each subcontractor.

ARTICLE 41 – COMPLIANCE WITH LAWS

- A. Contractor shall comply with all laws, rules, regulations and requirements of the United States affecting the construction and testing of the Vessel, as set forth in this Agreement, the Plans and Specifications, the FTA Grants, FHWA Grants or otherwise. Contractor shall also comply with all laws, rules, regulations and requirements of any state in which the Vessel is constructed, tested or repaired, with all laws, rules, regulations and requirements of local authorities, with all applicable laws of the State of Maine and rules and regulations of the State of Maine, Department of Transportation. Contractor shall procure, at its own expense, any permits required under federal, state or local law as may be necessary in connection with any contract work set forth in this Agreement.
- B. Applicability to Subcontractors. Vendor shall ensure and shall cause the foregoing provisions to be inserted in any subcontract for any work covered by this Agreement so that such provisions shall be binding upon each subcontractor and each of its subcontractors' subcontractors, etc.

ARTICLE 42 – OFFICIALS NOT TO BENEFIT

No member of, nor delegate to, the legislatures of the United States or the State of Maine, nor any Maine Department of Transportation employee shall be permitted to any share in any part or benefit of this Agreement that may arise therefrom, but this provision shall not be construed to extend to this Agreement if made with a corporation for its general benefit. No member of, nor delegate to, the legislatures of the United States or the State of Maine, nor any Maine Department of Transportation employee shall be employed by Contractor, either with or without compensation, as an attorney, agent, officer or director.

ARTICLE 43 – OTHER GOVERNMENTAL REQUIREMENTS

- A. The Vessel, with its inventory, equipment and machinery, shall be built strictly in accordance with all applicable statutes, rules, and regulations (and directives issued pursuant thereto) of the United States Government and all agencies of the United States, including but not limited to the United States Department of Transportation (“DOT”), the Federal Transit Administration (“FTA”), the Federal Highway Administration (“FHWA”), the United States Coast Guard, and all successor agencies, and in accordance with the requirements of applicable Federal Acquisition Regulations, set forth or referenced in this agreement, including the Appendices (collectively the “Governmental Rules”).
- B. Without limiting the previous subparagraph, attached as Appendix D is (i) a listing of certain Governmental Rules with which Contractor (and all of its sub-contractors, independent contractors, suppliers, and vendors) must comply, together with (ii) a brief summary of each such Governmental Rule. Contractor agrees that such summaries are for reference only and that Contractor will be responsible for informing itself fully about each such Governmental Rule. Contractor agrees (for itself and for all of its sub-contractors, independent contractors, suppliers, and vendors) that it (and each of them) will strictly comply with each such Governmental Rule.
- i. For the purpose of meeting the Disadvantaged Business Enterprise (“DBE”) requirements of 49 CFR Part 23, Owner has established a goal of **1.9 %** utilization (of total contract amount) of Disadvantaged/Women Business Enterprises (“D/WBE”). Contractor is required to demonstrate good faith effort to achieve the goal (APPENDIX F).
- ii. Notwithstanding the requirements of APPENDIX D, Owner has been granted an exemption/suspension of the provisions of the Davis-Bacon Act relating to minimum wages to be paid to the classifications of work required for construction of the Vessel. The contractor must pay at the very least the Federal minimum wage rate, submit weekly certified payroll statements, and comply with all other Department of Labor laws.
- C. In the event of the Contractor’s noncompliance with the provisions of this Contract relating to Governmental Rules, the Owner shall impose such Contract sanctions as it or the relevant governmental agency may determine to be appropriate, including, but not limited to:

- i. Withholding of payments to the Contractor under the Contract until the Contractor complies; and/or
 - ii. Cancellation, termination, or suspension of the Contract, in whole or in part.
- D. The Contractor shall include the provisions of this Section in every subcontract, including procurements of materials and leases of equipment, unless excepted by the Governmental Rules. The Contractor shall take such action with respect to any subcontract or procurement as the Owner or any governmental agency may direct as a means of enforcing such provisions including sanctions; provided, however, that, in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request the Owner to enter into such litigation to protect the interests of the Owner, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.
- E. Contractor shall comply with all mandatory standards and policies relating to energy efficiency which are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 USC Section 6321 et seq.).
- F. Contractor agrees to comply with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act (42 USC 1857(h)), Section 508 of the Clean Water Act (33 USC 1368), Executive Order 11378, and Environmental Protection Agency regulations (40 CFR, Parts 89, 92) which prohibit the use under non-exempt federal contracts, grants or loans, of facilities included on the EPA List for Violating Facilities. Contractor shall report violations to the Federal Transit Administration ("FTA") and to the US EPA Assistant Administrator for Enforcement (ENO329). Contractor shall include this provision in all subcontracts in excess of \$100,000.
- G. The Contractor shall erect at the site of construction, and maintain during construction, signs satisfactory to the relevant governmental agencies identifying the Project and indicating that the Government is participating in the development of the Project.
- H. The Contractor and all sub-contractors, independent contractors, suppliers, and vendors shall, on Owner's request, submit evidence to the Owner that the governing air pollution criteria will be met. This evidence and related documents will be retained by the Contractor for on-site examination by relevant governmental agencies.
- I. Contractor recognizes and acknowledges that Owner is financing the construction of the Vessel in large part through a grant from an agency of the federal government and that therefore the Owner and the terms of this Contract are subject to all applicable regulations and requirements of that agency, including but not limited to the "Federal Transportation Administration Agreement", Part II, Terms and Conditions, form FTA F 5K, revised 5/89. Contractor agrees to be bound by all such regulations and requirements applicable to contractors and to fully cooperate with and assist Owner in fulfilling its obligations under such regulations and requirements.

ARTICLE 44 – MUTUAL WAIVER OF CONSEQUENTIAL DAMAGES

In no event shall Contractor or Owner be liable to the other party, whether arising in tort, contract or otherwise, for incidental, punitive or consequential damages, including without limitation loss of profit, loss of use or loss of hire. Further, in no event shall Contractor be entitled to recover more than the Contract Amount. No payments due the Contractor will be adjusted for inflation and no interest shall be due and payable on any payment due the Contractor, including payments that relate to issues, disputes or claims.

ARTICLE 45 – ENTIRE AGREEMENT

This Agreement contains the entire agreement between Owner and Contractor relating to the subject matter contained herein and supersedes all prior discussions and agreements between Owner and Contractor. Neither Owner nor Contractor shall be bound by any definition, condition, warranty or representation other than as expressly stated in this Agreement and/or attached Appendices 1 through 6.

Dated: _____

Witness

Contractor

Dated: _____

Witness

David A. Cole, Commissioner
Maine Department of Transportation

Section 5

Appendices

APPENDIX A

FTA REQUIRED PROVISIONS

A. CARGO PREFERENCE REQUIREMENTS

46 U.S.C. 1241
46 CFR Part 381

Applicability to Contracts

The Cargo Preference requirements apply to all contracts involving equipment, materials, or commodities which may be transported by ocean vessels.

Flow Down

The Cargo Preference requirements apply to all subcontracts when the subcontract may be involved with the transport of equipment, material, or commodities by ocean vessel.

Cargo Preference

Use of United States - Flag Vessels - The contractor agrees: a. To use privately owned United States-Flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying contract to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels; b. to furnish within 20 working days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and the FTA recipient (through the contractor in the case of a subcontractor's bill-of-lading.); c. to include these requirements in all subcontracts issued pursuant to this contract when the subcontract may involve the transport of equipment material, or commodities by ocean vessel.

B. ENERGY CONSERVATION REQUIREMENTS

42 U.S.C. 6321 et seq.
49 CFR Part 18

Applicability to Contracts

The Energy Conservation requirements are applicable to all contracts.

Flow Down

The Energy Conservation requirements extend to all third party contractors and their contracts at every tier and sub recipients and their sub agreements at every tier.

Energy Conservation

The contractor agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

C. ACCESS TO RECORDS AND REPORTS

49 U.S.C. 5325

18 CFR 18.36 (i)

49 CFR 633.17

Applicability to Contracts

Reference Chart "Requirements for Access to Records and Reports by Type of Contracts"

Flow Down

Not Applicable

Access to Records

The following access to records requirements apply to this Contract:

1. Where the Purchaser is not a State but a local government and is the FTA Recipient or a sub grantee of the FTA Recipient in accordance with 49 C. F. R. 18.36(i), the Contractor agrees to provide the Purchaser, the FTA Administrator, the Comptroller General of the United States or any of their authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts and transcriptions. Contractor also agrees, pursuant to 49 C. F. R. 633.17 to provide the FTA Administrator or his authorized representatives access to Contractor's records and construction sites pertaining to a major capital project, defined at 49 U.S.C. 5302(a)l, which is receiving federal financial assistance through the programs described at 49 U.S.C. 5307, 5309 or 5311.
2. Where any Purchaser which is the FTA Recipient or a sub grantee of the FTA Recipient in accordance with 49 U.S.C. 5325(a) enters into a contract for a capital project or improvement (defined at 49 U.S.C. 5302(a)1) through other than competitive bidding, the Contractor shall make available records related to the contract to the Purchaser, the Secretary of Transportation and the Comptroller General or any authorized officer or employee of any of them for the purposes of conducting an audit and inspection.
3. The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.
4. The Contractor agrees to maintain all books, records, accounts and reports required under this contract for a period of not less than three years after the date of termination or expiration of this contract, except in the event of litigation or settlement of claims arising from the performance of this contract, in which case Contractor agrees to maintain same until the Purchaser, the FTA Administrator, the Comptroller General, or any of their duly authorized representatives, have disposed of all such litigation, appeals, claims or exceptions related thereto. Reference 49 CFR 18.39(i)(11).

D. FEDERAL CHANGES
49 CFR Part 18

Applicability to Contracts

The Federal Changes requirement applies to all contracts.

Flow Down

The Federal Changes requirement flows down appropriately to each applicable changed requirement.

Federal Changes

Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Agreement (Form FTA MA (2) dated October, 1995) between Purchaser and FTA , as they may be amended or promulgated from time to time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

E. RECYCLED PRODUCTS

Applicability to Contracts

The Recycled Products requirements apply to all contracts for items designated by the EPA, when the purchaser or contractor procures \$10,000 or more of one of these items during the fiscal year, or has procured \$10,000 or more of such items in the previous fiscal year, using Federal funds. New requirements for "recovered materials" became effective May 1, 1996. These new regulations apply to all procurement actions involving items designated by the EPA, where the procuring agency purchases \$10,000 or more of one of these items in a fiscal year, or when the cost of such items purchased during the previous fiscal year was \$10,000.

Flow Down

These requirements flow down to all contractor and subcontractor tiers.

Recovered Materials

The contractor agrees to comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42U.S.C. 6962), including but not limited to the regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of designated in Subpart B of 40 CFR Part 247.

F. NO GOVERNMENT OBLIGATION TO THIRD PARTIES

Applicability to Contracts

Applicable to all contracts.

Flow Down

Not required by statute or regulation for either primary contractors or subcontractors, this concept should flow down to all levels to clarify, to all parties to the contract, that the Federal Government does not have contractual liability to third parties, absent specific written consent.

No Obligation by the Federal Government.

1. The Purchaser and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this contract and shall not be subject to any obligations or liabilities to the Purchaser, Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.
2. The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

G. PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS AND RELATED ACTS

**31 U.S.C. 3801 et seq.
49 CFR Part 31 18 U.S.C. 1001
49 U.S.C. 5307**

Applicability to Contracts

These requirements are applicable to all contracts.

Flow Down

These requirements flow down to contractors and subcontractors who make, present, or submit covered claims and statements.

Program Fraud and False or Fraudulent Statements or Related Acts.

1. The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § § 3801 et seq and U.S. DOT regulations, “Program Fraud Civil Remedies, “ 49 CFR Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.
2. The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5307 (n)(1) on the contractor, to the extent the Federal Government deems appropriate.

3. The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

H. TERMINATION
49 U.S.C. Part 18
FTA Circular 4220.11)

Applicability to Contracts

All contracts (with the exception of contracts with nonprofit organizations and institutions of higher education,) in excess of \$10,000 shall contain suitable provisions for termination by the grantee including the manner by which it will be effected and the basis for settlement. (For contracts with nonprofit organizations and institutions of higher education the threshold is \$100,000.) In addition, such contracts shall describe conditions under which the contract may be terminated for default as well as conditions where the contract may be terminated because of circumstances beyond the control of the contractor.

Flow Down

The termination requirements flow down to all contracts in excess of \$10,000, with the exception of contracts with nonprofit organizations and institutions of higher learning.

1. Termination for Convenience (General Provision) Owner may terminate this contract, in whole or in part, at any time by written notice to the Contractor when it is in the Government's best interest. The Contractor shall be paid its costs, including contract close-out costs, and profit on work performed up to the time of termination. The Contractor shall promptly submit its termination claim to Owner to be paid the Contractor. If the Contractor has any property in its possession belonging to Owner, the Contractor will account for the same, and dispose of it in the manner Owner directs.
2. Termination for Default [Breach or Cause] (General Provision) If the Contractor does not deliver supplies in accordance with the contract delivery schedule, or, if the contract is for services, the Contractor fails to perform in the manner called for in the contract, or if the Contractor fails to comply with any other provisions of the contract, the (Recipient) may terminate this contract for default. Termination shall be effected by serving a notice of termination on the contractor setting forth the manner in which the Contractor is in default. The Contractor will only be paid the contract price for supplies delivered and accepted, or services performed in accordance with the manner of performance set forth in the contract. If it is later determined by Owner that the Contractor had an excusable reason for not performing, such as a strike, fire, or flood, events which are not the fault of or are beyond the control of the Contractor, Owner, after setting up a new delivery of performance schedule, may allow the Contractor to continue work, or treat the termination as a termination for convenience.
3. Opportunity to Cure (General Provision) Owner in its sole discretion may, in the case of a termination for breach or default, allow the Contractor [an appropriately short period of

time] in which to cure the defect. In such case, the notice of termination will state the time period in which cure is permitted and other appropriate conditions.

If Contractor fails to remedy to Owner's satisfaction the breach or default or any of the terms, covenants, or conditions of this Contract within [ten (10) days] after receipt by Contractor or written notice from Owner setting forth the nature of said breach or default, Owner shall have the right to terminate the Contract without any further obligation to Contractor. Any such termination for default shall not in any way operate to preclude Owner from also pursuing all available remedies against Contractor and its sureties for said breach or default.

4. Waiver of Remedies for any Breach In the event that Owner elects to waive its remedies for any breach by Contractor of any covenant, term or condition of this Contract, such waiver by Owner shall not limit Owner's remedies for any succeeding breach of that or of any other term, covenant, or condition of this Contract.
5. Termination for Default (Supplies and Service) If the Contractor fails to deliver supplies or to perform the services within the time specified in this contract or any extension or if the Contractor fails to comply with any other provisions of this contract, Owner may terminate this contract for default. Owner shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of the default. The Contractor will only be paid the contract price for supplies delivered and accepted, or services performed in accordance with the manner or performance set forth in this contract.

If, after termination for failure to fulfill contract obligations, it is determined that the Contractor was not in default, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the Recipient.

I. CIVIL RIGHTS REQUIREMENTS

29 U.S.C. § 623, 42 U.S.C. § 2000

42 U.S.C. § 6102, 42 U.S.C. § 12112

42 U.S.C. § 12132, 49 U.S.C. § 5332

29 CFR Part 1630, 41 CFR Parts 60 et seq.

Applicability to Contracts

The Civil Rights Requirements apply to all contracts.

Flow Down

The Civil Rights requirements flow down to all third party contractors and their contracts at every tier.

Civil Rights

The following requirements apply to the underlying contract:

1. Nondiscrimination - In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. §

6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

2. Equal Employment Opportunity - The following equal employment opportunity requirements apply to the underlying contract.
 - a. Race. Color. Creed. National Origin. Sex - In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. Parts 60 et seq., (which implement Executive Order No. 11246, "Equal Employment Opportunity," as amended by Executive Order No. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," 42 U.S.C. § 2000e note), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the Project. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
 - b. Age - In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. § 623 and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
 - c. Disabilities - In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the Contractor agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630, pertaining to employment of persons with disabilities. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
3. The Contractor also agrees to include these requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

J. BREACHES AND DISPUTE RESOLUTION**49 CFR Part 18****FTA Circular 4220.1D****Applicability to Contracts**

All contracts in excess of \$100,000 shall contain provisions or conditions which will allow for administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as may be appropriate. This may include provisions for bonding, penalties for late or inadequate performance, retained earnings, liquidated damages or other appropriate measures.

Flow Down

The Breaches and Dispute Resolutions requirements flow down to all tiers.

Disputes

Disputes arising in the performance of this Contract shall be resolved in accordance with Article 24 (DISPUTES) of this Agreement. The Commissioner's decision shall be the Department's final decision with regard to the dispute and it shall constitute the Department's interpretation of the Contract.

Performance During Dispute - Unless otherwise directed by Owner, Contractor shall continue performance under this Contract while matters in dispute are being resolved.

Claims for Damages - Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the party or of any of his employees, agents or others for whose acts he is legally liable, a claim for damages therefore shall be made in writing to such other party within a reasonable time after the first observance of such injury of damage.

Remedies - Unless this contract provides otherwise, all claims, counterclaims, disputes and other matters in question between Owner and the Contractor arising out of or relating to this agreement or its breach will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the State in which the Owner is located.

Rights and Remedies - The duties and obligations imposed by-the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by Owner, Naval Architect or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

K. STATE AND LOCAL LAW DISCLAIMER**Applicability of Contracts**

This disclaimer applies to all contracts.

Flow Down

The disclaimer has unlimited flow down.

Model Clause/Language

FTA has developed the following language.

State and Local Law Disclaimer

The use of many of the suggested clauses are not governed by Federal law, but are significantly affected by State law. The language of the suggested clauses may need to be modified depending on state law, and that before the suggested clauses are used in the grantees procurement documents, the grantees should consult with their local attorney.

L. INCORPORATION OF FTA TERMS
FTA Circular 4220.ID

Applicability to Contracts

The incorporation of FTA terms applies to all contracts.

Flow Down

The incorporation of FTA terms has unlimited flow down.

Incorporation of Federal Transit Administration (FTA) Terms

The preceding provisions include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by DOT, as set forth in FTA Circular 4220 ID, dated April 15, 1996, are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any Owner requests which would cause Owner to be in violation of the FTA terms and conditions.

M. FLY AMERICA

The Recipient understands and agrees that the Federal Government will not participate in the costs of international air transportation of any persons involved in or property acquired for the Project unless that air transportation is provided by U.S. flag air carriers to the extent service by U.S. flag air carriers is available, in accordance with the International Air Transportation Fair Competitive Practices Act of 1974, as amended, 49 U.S.C. § 40118, and with U.S. GSA regulations, "Use of United States Flag Air Carriers," 41 C.F.R. § 301-10.131 through 301-10.143.

APPENDIX B

FTA REQUIRED CLAUSES

1. PRE-AWARD AND POST-DELIVERY AUDIT REQUIREMENTS:

The Contractor agrees to comply with 49 U.S.C. § 5323(l) and FTA's implementing regulation at 49 C.F.R. Part 663 and to submit the following certifications:

Buy America Requirements: The Contractor shall complete and submit a declaration certifying either compliance or noncompliance with Buy America. If the Bidder certifies compliance with Buy America, it shall submit documentation which lists 1) component and subcomponent parts of the Vessel to be purchased identified by manufacturer of the parts, their country of origin and costs; and 2) the location of the final assembly point for the component or subcomponent of the Vessel, including a description of the activities that will take place at the final assembly point and the cost of final assembly.

2. BUY AMERICA REQUIREMENTS**49 U.S.C. 5323 (j)****49 CFR Part 661****Applicability to Contracts**

The Buy America requirements apply to the following types of contracts: Construction Contracts and Acquisition of Goods or Rolling Stock (valued at more than \$100,000).

Flow Down

The Buy America requirements flow down from FTA recipients and sub recipients to first tier contractors, who are responsible for ensuring that lower tier contractors and subcontractors are in compliance.

Mandatory Clause/Language

The Buy America regulation, at 49CFR 661.13, requires notification of the Buy America requirements in FTA funded contracts, but does not specify the language to be used. The following language has been developed by FTA.

Buy America

The contractor agrees to comply with 49 U.S.C. 53230) and 49 CFR Part 661, which provide that Federal funds may not be obligated unless steel, iron, and manufactured products used in FTA-funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 CFR 661.7, and include final assembly in the United States for 15 passenger vans and 15 passenger wagons produced by Chrysler Corporation, microcomputer equipment, software, and small purchases (currently less than \$100,000) made with capital, operating, or planning funds. Separate requirements for rolling stock are set out at 53230)(2)(C) and 49 CFR 661.11. Rolling stock not subject to a general waiver must be manufactured in the United States and have a 60 percent domestic content.

A Bidder or offeror must submit to the FTA recipient the appropriate Buy America certification (below) with all bids on FTA-funded contracts, except those subject to a general waiver. Bids or offers that are not accompanied by a completed Buy America certification must be rejected as nonresponsive. This requirement does not apply to lower tier subcontractors.

Certification requirement for procurement of steel, iron, or manufactured products.

Certificate of Compliance with 49 U.S. C. 5323(1)(1)

The Bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 53230)(1) and the applicable regulations in 49 CFR Part 661.

Date_____

Signature_____

Company Name_____

Title_____

Certificate of Non-Compliance with 49 U.S. C. 5323(1)(1)

The Bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 53230)(1), but it may qualify for an exception pursuant to 49 U.S.C. 53230)(2)(B) or 0)(2)(D) and the regulations in 49 CFR 661:7.

Date_____

Signature_____

Company Name_____

Title_____

Certification requirement for procurement of buses, other rolling stock and associated equipment.

Certificate of Compliance with 49 U.S. C. 53236)(2)(C).

The Bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and the regulations at 49 CFR Part 661.

Date_____

Signature_____

Company Name_____

Title _____

Certificate of Non-Compliance with 49 U. S. C. 53236)(2)(C)

The Bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2)(C), but may qualify for an exception pursuant to 49 U.S.C. 53230)(2)(B) or 0)(2)(D) and the regulations in 49 CFR 661.7.

Date _____

Signature _____

Company Name _____

Title _____

3. LOBBYING
31 U.S.C. 1352
49 CFR Part 19
49 CFR Part 20

Applicability to Contracts

The Lobbying requirements apply to Construction/Architectural and Engineering/ Acquisition of Rolling Stock/Professional Service Contract/Operational Service Contract/Turnkey contracts.

Flow Down

The Lobbying requirements mandate the maximum flow down, pursuant to Byrd Anti-Lobbying Amendment, 31 U.S. C. § 1352(b)(5) and 49 C.F. R. Part 19, Appendix A, Section 7.

Mandatory Clause/Language

Clause and specific language therein are mandated by 49 CFR Part 19. Appendix A. Modifications have been made to the Clause pursuant to Section 10 of the Lobbying Disclosure Act of 1995, P. L. 104-65 [to be codified at 2 W.S.C. § 1601, *et seq.*] Lobbying Certification and Disclosure of Lobbying activities for third party contractors are mandated by 31 U.S.C. 1352(b)(5), as amended by section 10 of the Lobbying Disclosure Act of 1995, and DOT implementing regulation, "New Restrictions of Lobbying" at 49 CFR § 20.11 (d).

Language in Lobbying Certification is mandated by 49 CFR Part 19, Appendix A, Section 7, which provides that contractors file the certification required by 49 CFR Part 20, Appendix A. Modifications have been made to the Lobbying Certification pursuant to Section 10 of the Lobbying Disclosure Act of 1995.

Use of "Disclosure of Lobbying Activities," Standard Form-LLL set forth in Appendix B of 49 CFR Part 20m as amended by "government wide Guidance For New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96) is mandated by 49 CFR Part 20, Appendix A.

Byrd Anti-Lobbying Amendment, 31 U.S.C. 1352, as amended by the Lobbying Disclosure Act of 1995, P.L. 104-65 [to be codified at 2 U.S.C. § 1601, *et seq.*]

Contractors who apply or bid for an award of \$100,000 or more shall file the certification required by 49 CFR part 20, "New Restrictions on Lobbying." Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal contract, grant or award covered by 31 U.S.C 1352. Such disclosures are forwarded from tier to tier up to the recipient.

APPENDIX A, 49 CFR PART 20—CERTIFICATION REGARDING LOBBYING
(To be submitted with each bid or offer exceeding \$100,000)

The undersigned (Contractor) certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid , by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of an Federal contract, the making of any Federal Grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying" in accordance with its instruction [as amended by "Government wide Guidance for New Restrictions on Lobbying" 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P. L. 104-65, to be codified at 2 U.S.C. 1601m et seq.)]
3. The undersigned shall require that the language of this certification be included in the award documents for all sub awards at all tiers (including subcontracts, sub grants, and contracts under grants, loans, and cooperative agreements) and that all sub recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each failure. [Note: Pursuant to 31 U.S.C. § 1352 (c)(1)-(2), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure or failure.]

The Contractor, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, et seq., apply to this certification and disclosure, if any.

_____ Signature of Contractor's Authorized Official

_____ Name and Title of Contractor's Authorized
Official

_____ Date

4. GOVERNMENT-WIDE DEBARMENT AND SUSPENSION (NONPROCUREMENT)**49 CFR Part 29
Executive Order 12549****Applicability to Contracts**

Executive Order 12549, as implemented by 49 CFR Part 29, prohibits FTA recipients and sub-recipients from contracting for goods and services from organizations that have been suspended or debarred from receiving Federally-assisted contracts. As part of their applications each year, recipients are required to submit a certification to the effect that they will not enter into contracts over \$100,000 with suspended or debarred contractors and that they will require their contractors (and their subcontractors) to make the same certification to them.

Flow Down

Contractors are required to pass this requirement on to subcontractors seeking subcontracts over \$100,000. Thus, the terms "lower tier covered participant" and "lower tier covered transaction" include both contractors and subcontractors and contracts and subcontracts over \$100,000.

Model Clause/Language

(Instructions) The certification and instruction language is contained at 29 CFR Part 29, Appendix B, and must be included in IFB's and RFP's [for inclusion by contractors in their bids or proposals] for all contracts over \$100,000, regardless of the type of contract to be awarded. Certification Regarding Debarment Suspension, and Other Responsibility Matters - Lower Tier Covered Transactions (Third Party Contracts over \$100,000).

Instructions for Certification

1. By signing and submitting this bid or proposal, the prospective lower tier participant is providing the signed certification set out below.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, (Recipient) may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant shall provide immediate written notice to (Recipient) if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "persons;" "lower tier covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549 [49 CFR Part 29]. You may contact (Recipient) for assistance in obtaining a copy of those regulations.

5. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized in writing by (Recipient).
6. The prospective lower tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction", without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List issued by U.S. General Service Administration.
8. Nothing contained in the foregoing shall be construed to require establishment of system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under Paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to all remedies available to the Federal Government, (Recipient) may pursue available remedies including suspension and/or debarment.

"Certification Regarding Debarment Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction"

1. The prospective lower tier participant certifies, by submission of this bid or proposal, that neither it nor its "principals" [as defined at 49 C.F.R. § 29.105(p)] is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.
2. When the prospective lower tier participant is unable to certify to the statements in this certification, such prospective participant shall attach an explanation to this proposal.

5. AMERICANS WITH DISABILITIES (ADA) ACCESS

The Vessel must meet, to the maximum extent possible, all of the existing guidelines and recommendations from the United States Access Board regarding access to passenger vessels. Guidelines can be viewed at: <http://www.access-board.gov/>

Please certify that vessel being bid will meet all available ADA access guidelines to passenger vessels.

Date

Printed Name of Person Bidding

Signature

Title

6. DISADVANTAGED BUSINESS ENTERPRISE (DBE)

Applicability to Contracts

DBE provisions only apply to all U.S.DOT assisted contracts.

Flow Down

These requirements only flow to FTA recipients who receive at least \$250,000 in FTA capital and operating funds, exclusive of funds for transit vehicle purchases (reference 49 CFR 23.67), or \$100,000 in FTA planning funds.

Model Clause/Language

No specific language is mandated, but FTA has included language developed by Southwest Ohio Regional Transit Authority (SORTA).

Disadvantaged Business Enterprise Provision

1. The Federal Fiscal Year goal has been set by Owner in an attempt to match projected procurements with available qualified disadvantaged businesses. Owner goals for budgeted service contracts, bus parts, and other material and supplies for Disadvantaged Business Enterprises have been established by Owner as set forth by the Department of Transportation Regulations 49 C.F.R. Part 23, March 31, 1980, and amended by Section 106(c) of the Surface Transportation Assistance Act of 1987, and is considered pertinent to any contract resulting from this request for proposal.

If a specific DBE goal is assigned to this contract, it will be clearly stated in the Special Provisions, and if the contractor is found to have failed to exert sufficient, reasonable, and good faith efforts to involve DBE's in the work provided, Owner may declare the Contractor noncompliant and in breach of contract. The goal for this Contract is 1.9%.

(a) Policy - It is the policy of the Department of Transportation and Owner that Disadvantaged Business Enterprises, as defined in 49 CFR Part 23, and as amended in Section 106(c) of the Surface Transportation and Uniform Relocation Assistance Act of 1987, shall have the maximum opportunity to participate in the performance of Contract financed in whole or in part with federal funds under this Agreement. Consequently, the DBE requirements of 49 CFR Part 23 and Section 106(c) of the STURAA of 1987, apply to this Contract.

The Contractor agrees to ensure that DBEs as defined in 49 CFR Part 23 and Section 106(c) of the STURAA of 1987, have the maximum opportunity to participate in the whole or in part with federal funds provided under this Agreement. In this regard, the Contractor shall take all necessary and reasonable steps in accordance with the regulations to ensure that DBEs have the maximum opportunity to compete for and perform subcontracts. The Contractor shall not discriminate on the basis of race, color, national origin, religion, sex, age or physical handicap in the award and performance of subcontracts.

It is further the policy of Owner to promote the development and increase the participation of businesses owned and controlled by disadvantaged. DBE involvement in all phases of Owner procurement activities are encouraged.

- (b) DBE obligation - The Contractor and its subcontractors agree to ensure that disadvantaged businesses have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with federal funds provided under the Agreement. In that regard, all Contractors and subcontractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 23 as amended, to ensure that minority business enterprises have the maximum opportunity to compete for and perform contracts.
- (c) Where the Contractor is found to have failed to exert sufficient reasonable and good faith efforts to involve DBE's in the work provided, Owner may declare the contractor noncompliant and in breach of contract.
- (d) The Contractor will keep records and documents for a reasonable time following performance of this contract to indicate compliance with Owner DBE program. These records and documents will be made available at reasonable times and places for inspection by any authorized representative of Owner and will be submitted to Owner upon request.
- (e) Owner will provide affirmative assistance as may be reasonable and necessary to assist the prime contractor in implementing their programs for DBE participation. The assistance may include the following upon request: * Identification of qualified DBE * Available listing of Minority Assistance Agencies * Holding bid conferences to emphasize requirements

2. DBE Program Definitions, as used in the contract:

- (a) Disadvantaged business "means a small business concern":
 - i. Which is at least 51 percent owned by one or more socially and economically disadvantaged individuals, or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more socially and economically disadvantaged individuals; and
 - ii. Whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it. or
 - iii. Which is at least 51 percent owned by one or more women individuals, or in the case of any publicly owned business, at least 51 % of the stock of which is owned by one or more women individuals; and
 - iv. Whose management and daily business operations are controlled by one or more women individuals who own it.

- (b) "Small business concern" means a small business as defined by Section 3 of the Small Business Act and Appendix B - (Section 106(c)) Determinations of Business Size.

- (c) "Socially and economically disadvantaged individuals" means those individuals who are citizens of the United States (or lawfully admitted permanent residents) and States (or lawfully admitted permanent residents) and who are black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, Asian-Indian Americans, or women, and any other minorities or individuals found to be disadvantaged by the Small Business Administration pursuant to section 8(a) of the Small Business Act.
 - i. "Black Americans", which includes persons having origins in any of the Black racial groups of Africa;
 - ii. "Hispanic Americans", which includes persons of Mexican, Puerto Rican, Cuba, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;
 - iii. "Native Americans", which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;
 - iv. "Asian-Pacific Americans", which includes persons whose origins are from Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Samoa, Guam, the U.S. Trust Territories of Pacific, and the Northern Marianas;
 - v. "Asian-Indian Americans", which includes persons whose origins are from India, Pakistan, and Bangladesh.

7. TRANSIT VEHICLE MANUFACTURERS (TVM)

Certification of Compliance with Disadvantaged Business Regulations

This procurement is subject to the provisions of 49 CFR Section 23.67. Accordingly, the following certification must be completed and submitted with the bid, as a condition of bidding. A bid which does not include the certification will not be considered.

TVM Certification

The bidder if a transit vehicle manufacturer hereby certifies that it has complied with the requirements of 49 CFR Section 23.67 by submitting an annual DBE/WBE goal to the Federal Transit Administration (FTA). The goal has either been approved or not disapproved by FTA.

The bidder, if a non-manufacturer supplier, hereby certifies that the manufacturer of the transit vehicle to be supplied has complied with the above referenced requirement of 49 CFR Section 23.67.

Date

Printed Name of Person Bidding

Signature

Title

Appendix C

Federal Highway Administration (FHWA) Provisions

NOT USED IN THIS CONTRACT

Appendix D

Other Governmental Rules

OTHER GOVERNMENTAL RULES

1. Equal Employment Opportunity. During the performance of this Agreement, Vendor agrees as follows:

- a. Contractor shall not discriminate against any employee or applicant for employment relating to this Agreement because of race, color, religious creed, sex, national origin, ancestry, age, physical or mental disability, unless related to a bona fide occupational qualification. Contractor shall take affirmative action to ensure that applicants are employed and employees are treated during employment, without regard to their race, color, religion, sex, age, national origin, or physical or mental disability. Failure by Contractor to carry out these requirements is a material breach of this Agreement which may result in the termination of this Agreement or such other remedy as the Owner deems appropriate.

Such action shall include but not be limited to the following: employment, upgrading, demotions, or transfers; recruitment or recruitment advertising; layoffs or terminations; rates of pay or other forms of compensation; and selection for training including apprenticeship. Contractor agrees to post in conspicuous places available to employees and applicants for employment notices setting forth the provisions of this nondiscrimination clause.

- b. Contractor shall, in all solicitations or advertising for employees placed by or on behalf of Vendor relating to this Agreement, state that all qualified applicants shall receive consideration for employment without regard to race, color, religious creed, sex, national origin, ancestry, age, physical or mental disability.
- c. Contractor shall send to each labor union or representative of the workers with which it has a collective bargaining agreement, or other agreement or understanding, whereby it is furnished with labor for the performance of this Agreement a notice to be provided by the contracting agency, advising the said labor union or workers' representative of Contractor's commitment under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- d. Contractor shall inform Owner's Equal Employment Opportunity Coordinator of any discrimination complaints brought to an external regulatory body (Maine Human Rights Commission, EEOC, Office of Civil Rights, etc.) against their agency by any individual as well as any lawsuit regarding alleged discriminatory practice.
- e. Contractor shall comply with all aspects of the Americans with Disabilities Act (ADA) in employment and in the provision of services under this Agreement to include accessibility and reasonable accommodations for employees and clients.

- f. Contractor shall ensure that each of its subcontractors, with a contract in excess of \$50,000, shall also pursue in good faith affirmative action programs.
 - g. Vendor shall ensure and shall cause the foregoing provisions to be inserted in any subcontract for any work covered by this Agreement so that such provisions shall be binding upon each subcontractor and each of its subcontractors' subcontractors, etc., provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.
2. Employment and Personnel. Vendor shall not engage any person in the employ of Owner in a position that would constitute a violation of 5 MRSA § 18 or 17 MRSA § 3104 or other similar statutes. Vendor shall not engage on a full-time, part-time or other basis during the period of this Agreement any other personnel who are or have been at any time during the period of this Agreement in the employ of Owner, except regularly retired employees, without the written consent of the Owner. Further, Vendor shall not engage on this project on a full-time, part-time or other basis during the period of this Agreement any retired employee of the Owner who has not been retired for at least one year, without the written consent of the Owner. Vendor shall cause the foregoing provisions to be inserted in any subcontract for any work covered by this Agreement so that such provisions shall be binding upon each subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.
3. Owner's Employees Not to Benefit. No individual employed by the Owner at the time this Agreement is executed or any time thereafter shall be admitted to any share or part of this Agreement or to any benefit that might arise therefrom directly or indirectly that would constitute a violation of 5 MRSA § 18 or 17 MRSA § 3104 or other similar statutes. No other individual employed by the Owner at the time this Agreement is executed or any time thereafter shall be admitted to any share or part of this Agreement or to any benefit that might arise therefrom directly or indirectly due to his employment by or financial interest in Vendor or any affiliate of Vendor, without the written consent of the Owner. Vendor shall cause the foregoing provisions to be inserted in any subcontract for any work covered by this Agreement so that such provisions shall be binding upon each subcontractor, provided that the foregoing provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.
4. Prompt Payment. Vendor agrees to pay each subcontractor under this Agreement for satisfactory performance of its contract no later than 30 days from the receipt of each payment Vendor receives from Owner. Vendor agrees further to return retainage payments to each subcontractor within 30 days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of Owner. This clause applies to both DBE and non-DBE subcontractors. Any person who fails to comply with this provision will have its payments and/or retainage withheld until such payments are made.

5. Applicability to Subcontractors. Vendor shall ensure and shall cause the foregoing provisions to be inserted in any subcontract for any work covered by this Agreement so that such provisions shall be binding upon each subcontractor and each of its subcontractors' subcontractors, etc.

6. Contract Assurance. The Contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

APPENDIX E

OTHER GENERAL PROVISIONS

APPENDIX E**OTHER GENERAL PROVISIONS**

The Contractor shall, without prejudice to the foregoing generality:

1. Take delivery of, or supply, except where specifically stated in the Plans and Specification as being supplied by the Owner, all components, services and materials required, and that within the price hereinafter specified;
2. Construct, build, fit out and commission the complete Vessel;
3. Conduct all trials leading up to acceptance by the Owner;
4. Accept and observe all obligations and requirements of all Contract Documents;
5. Undertake repair or restitution of defects arising during the Guarantee Period; and
6. Deliver the Vessel in a good condition using suitably qualified and experienced personnel.

During the construction of the Vessel so far as reasonable to facilitate the achievement of good shipbuilding practice, Contractor shall follow the following general provisions:

1. All paintwork systems must be applied in equitable ambient conditions;
2. The Vessel must not be launched afloat until it is proper and properly expedient to do so;
3. The Vessel is to be carefully set up fair on the Building Berth, and maintained fair and true at all times;
4. Fairness of lines throughout is an essential condition of this Contract, and shall be determined in accordance with definition contained in the Plans and Specification.
5. Throughout the period of construction and until acceptance, the Vessel is to be kept as clean as reasonably possible of wood shavings, swarf, dust, and other deleterious matter, and all traces of surplus paint, resin, glue and sundry materials are to be removed frequently. All surfaces and edges likely to sustain damage are to be protected during construction. Protective coatings are to be touched up promptly where damaged or worked on;
6. The Contractor shall be in charge of, and totally responsible for, the care and protection of the Vessel and of all things connected therewith until Delivery;

7. Throughout the currency of this Contract, the Contractor must ensure that efficient and safe arrangements are made on and around the Vessel for adequate stairways, staging, deck hand railing, supporting frameworks, the guarding of open areas, ventilation, power supplies, lighting and fire fighting protection and all other items necessary for the safe and proper completion of the Vessel's construction; and
8. Throughout the currency of this Contract, the Contractor must observe all the requirements of current health and safety at work regulations, and the like.

APPENDIX F

SPECIAL PROVISIONS

NOTICE

Disadvantaged Business Enterprise Proposed Utilization

The Apparent Low Bidder must submit the Disadvantaged Business Enterprise Proposed Utilization form by close of Business (4:30 P.M.) on Bid day.

The Contractor's Disadvantaged Business Enterprise Proposed Utilization Plan form contains additional information that is required by USDOT.

The Contractor's Disadvantaged Business Enterprise Proposed Utilization Plan form must be used.

A copy of the new Contractor's Disadvantaged Business Enterprise Proposed Utilization Plan and instructions for completing it are attached.

Note: Questions about DBE firms, or to obtain a printed copy of the DBE Directory, contact the Civil Rights Office at (207) 624-3066.

MaineDOT DBE Directory of Certified firms can also be obtained at www.maine.gov/mdot/disadvantaged-business-enterprises/dbe-home.php

**INSTRUCTIONS FOR PREPARING THE
CONTRACTOR'S DISADVANTAGED BUSINESS
ENTERPRISE UTILIZATION PLAN**

The Contractor Shall:

1. Submit a completed Contractor's Disadvantaged Business Enterprise Utilization Plan to the Contract's Engineer by 4:30 P.M. on the Bid day.
2. Extend equal opportunity to MAINEDOT certified DBE firms (as listed in MAINE Dot's DBE Directory of Certified Businesses) in the selection and utilization of Subcontractors and Suppliers.

SPECIFIC INSTRUCTIONS FOR COMPLETING THE FORM:

Insert Contractor name, the name of the person(s) preparing the form, and that person(s) telephone and fax number.

Provide total Bid price, Federal Project Identification Number, and location of the Project work.

In the columns, name each DBE firm to be used, provide the Unit or Item cost of the Work/Product to be provided by the DBE firm, give a brief description of the Work, and the dollar value of the Work.

If no DBE firm is to be utilized, the Contractor must document the reason(s) why no DBE firms are being used. Specific supporting evidence of good faith efforts taken by Contractors to solicit DBE Bidders must be attached. This evidence, as a minimum, includes phone logs, e-mail and/or mail DBE solicitation records, and the documented results of these solicitations.

NOTICE

**Maine Department of Transportation
Disadvantaged Business Enterprise Program**

Notice is hereby given that in accordance with US DOT regulation 49 CFR Part 26, the Maine Department of Transportation has established a DBE Program for disadvantaged business participation in the federal-aid construction program;

MaineDOT contracts covered by the program include consulting, construction, supplies, manufacturing, and service contracts.

For FFY 2009 (October 1, 2008 through September 30, 2009), MaineDOT has established a DBE participation goal of 1.9% to be achieved through race/gender neutral means. The goal setting methodology is available for viewing on the MaineDOT website:

<http://www.maine.gov/mdot/disadvantaged-business-enterprises/dbehome.php>.

**DISADVANTAGE/WOMEN BUSINESS ENTERPRISE
UTILIZATION BID PROPOSAL**

This bid assurance identifies the certified D/WBE firms which the bidder intends to use in meeting the D/WBE goal of this project.

Bidders who do not comply accordingly will find their bid rejected.

Provide in the space below the name and a brief description of the work or bid item(s) to be completed by the D/WBE. Bidders are reminded that the more detailed Pre-Signature Compliance Review form is required by close of business on bid opening day.

It is to be presented to the Civil Rights Office, MaineDOT Building. Completed DBE Proposed Utilization Forms may be faxed to 624-3431 ATTENTION, Civil Rights, but must be received prior to close of business.

D/WBE 1.9 % goal

| Name of D/WBE | Description of participation |
|---------------|------------------------------|
|---------------|------------------------------|

Projected Cost of the Above _____

*Signature _____ Date _____

*Signature indicates statement of intended utilization is accurate and reflects the bidder's good faith efforts.

September 28, 2005
Supersedes June 1, 1988

**SPECIAL PROVISION
Required Participation by
DISADVANTAGED BUSINESS ENTERPRISE**

The goal of work to be performed by Disadvantaged Business Enterprises for this contract is found on the DBE Utilization Bid Proposal sheets immediately following the Schedule of Items. For the purpose of this Special Provision, Disadvantage Business Enterprises are those which are so certified by the Civil Rights Office prior to the performance of the DBE on this contract.

Compliance with this Special Provision may be fulfilled by Disadvantaged Business Enterprise as either:

- A sole prime contractor,
- A member of a joint venture, may count towards commitment only the percentage of the ownership and control of the DBE partner in the joint venture,
- An approved subcontractor,
- An owner-operator of construction equipment.
- A renter of construction equipment to a prime or subcontractor,
- A consultant,
- A regular dealer of materials and/or equipment but only 60 percent of expenditures to DBE suppliers may be counted toward the commitment unless the supplier is also the manufacturer,
- Any combination of the above.

In determining compliance with the Special Provision the total creditable dollars paid to the Disadvantaged Business Enterprise shall be subtracted from the amount stated in the DBE Utilization Bid Proposal. The Contractor shall maintain records of payment in a form acceptable to that Office before requesting retent from the Contracts Section.

Failure by the Contractor to achieve the stated DBE goal, or more of this Contract performed by Disadvantaged Business Enterprise will result in the reduction in Contract payments by the amount determined by subtracting the resulting dollar value of work actually creditable to Disadvantaged Business Enterprise unless MAINEDOT, Civil Rights Office waives requirement because the Contractor has demonstrated a good faith effort to meet the contract goal in accordance with the following standards;

1. Whether the Contractor attended any pre-bid meetings that were scheduled by the MAINEDOT to inform DBE's of subcontracting opportunities;
2. Whether the Contractor advertised in general circulation, trade association, and minority/women's focus media concerning the subcontracting opportunities;
3. Whether the Contractor provided written notice to a reasonable number of specific DBE's that their interest in the contract is being solicited;

September 28, 2005
Supersedes June 1, 1988

4. Whether the Contractor followed up on initial solicitation of interest by directly contacting DBE's to determine with certainty whether the DBE's were interested;
5. Whether the Contractor selected portions of the work to be performed by DBE's in order to increase the likelihood of meeting the DBE goals;
6. Whether the Contractor provided interested DBE's with adequate information about the plans, specifications and requirements of the Contract;
7. Whether the Contractor negotiated in good faith with interested DBE's, not rejecting DBE's as unqualified without sound reasons based on a thorough investigation of their capabilities;
8. Whether the Contractor made efforts to assist interested DBE's in obtaining bonding or insurance, or made efforts to provide DBE's with other appropriate technical/financial assistance required by the MAINEDOT or contractor;
9. Whether the Contractor effectively used the services of available minority/women's community organizations, minority/women's contractors' groups; local, state and federal minority/women's business assistance offices; and other organizations that provide assistance in the recruitment and placement of DBE's;
10. Quarterly reports of actual dollars paid to DBE's on this project will be submitted to the Civil Rights Office by the end of the first week of January, April, July and October for the period covering the proceeding three months considered Federal Fiscal year quarters. The reports will be submitted directly on forms provided by that office. Failure to submit the form by the deadline may result in a withholding of approval of partial payment estimates by the Resident;
11. Any substitution of the named DBE firm(s) or the approved activity of the said firm(s) from that firm or activity and in the pre-contract signature compliance review form must be approved by Contract Modification which must be submitted by the Resident to the Civil Rights Office.

The following are acceptable reasons for approval of such a change order:

The DBE defaults or is over-extended:

The MaineDOT deletes portions of the work to be performed by the DBE.

It is not intended that the ability to negotiate a more advantageous contract with another sub-contractor be considered a valid basis for such a change in the DBE utilization once the pre-contract review has been passed. This Special Provision is in addition to all other Equal Employment Opportunity requirements of this contract. The Contractor must report the use of any bona-fide DBE.

___ Original Submission

Page ___ of

___ Revision # _____

**MaineDOT CONTRACTOR'S DISADVANTAGED BUSINESS ENTERPRISE
PROPOSED UTILIZATION FORM**

Low Bidder must furnish this form to Contracts Section Bid Opening day.

Contractor: _____ **Telephone:** _____

Prepared by: _____ **Fax:** _____

BID PRICE: \$ _____
_____/_____/_____

BID DATE: _____

FEDERAL PIN # _____

PROJECT LOCATION: _____

**TOTAL DBE _____ % PARTICIPATION FOR THIS
SUBMISSION**

| W B E• | D B E• | Firm Name | Unit/Item Cost | Unit # | Description of Work & Item Number | Actual \$ Value |
|-----------------------|-----------------------|------------------|-----------------------|---------------|--|----------------------------|
| | | | | | | |
| | | | | | | |
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| | | | | | | |
| | | | | | | |
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| | | | | | | |
| Total > | | | | | | |

Attach supporting evidence to the maximum participation of DBEs on this project. This is a requirement. This evidence must include name of firm(s) contacted, date contacted, and outcome of solicitation.

Equal Opportunity Use:

Form received: ___/___/___ Verified by: _____

___ Accepted ___ Rejected _____

cc: Contracts Other _____

- **WBEs are non-minority women owned firms certified by MaineDOT**
 - **DBEs are male and minority owned firms certified by MaineDOT**
- For a complete list of certified firms go to <http://www.maine.gov/mdot>**

Rev. 11/03

APPENDIX G

**Specifications for the Construction of a 154' LOA Passenger/Car
Ferry for the Maine State Ferry Service**

February 27, 2009

**Specifications for the Construction of a
154' LOA Passenger/Car Ferry
For the
Maine State Ferry Service**

Prepared for:

State of Maine
Department of Transportation
16 State House Station
Augusta, Maine 04333-0016

Prepared by:



Seaworthy Systems, Inc.
Part of the Rolls-Royce Group
P.O. Box 965
Essex, CT 06426

SSI Project No. 575-02

February 27, 2009

The following items which are listed in this Construction Specification are considered as optional items and are not to be included in the base price for the vessel. Each item listed below is to be priced separately as an option to be considered by MDOT. Each item's price shall be all inclusive and shall include all costs associated with that item including engineering, materials, material mark-up, labor, taxes, insurance and profit.

The language for these items included in the Construction Specification is to be used to develop a separate options list. The following lists the location within this specification of these items:

OPTION #1

Section 1.0 – General Requirements

Subsection 1.17 - SPARES

These items as listed are to be priced as an option.

OPTION #2

Section 6.0 – Accommodations and Furnishings

Subsection 6.3 - Rest Rooms

Reference Drawings: 575-02-601, 575-02-153

The Pilot House water closet in its entirety, stairway and furnishings shall be removed as listed and priced as an add-in option. Plate over to match surrounding deck.

OPTION #3

Section 6.0 – Accommodations and Furnishings

Subsection 6.4 - Pilot House

Reference Drawings: 575-02-601, 575-02-661

The Stidd chairs shall be removed as listed and priced as an add-in option.

OPTION #4

Section 6.0 – Accommodations and Furnishings

Subsection 6.4 - Pilot House

Reference Drawings: 575-02-601, 575-02-661

The Vanity with washbasin, liquid soap dispenser, towel rack, commercial quality single-pot coffee maker, commercial quality microwave oven, under-counter commercial quality refrigerator shall be removed as listed and priced as an add-in option.

OPTION #5

Section 6.0 – Accommodations and Furnishings

Subsection 6.6 – Engine Room and AMR Outfitting

Subsection 6.7 – Deck Equipment

The bench mounted heavy-duty 7” diameter electric grinder, 3 way swivel bench vise, the allowance for the purchase and installation of Owner-selected tools and tool chest, and the allowance for Owner-selected deck equipment shall be removed as listed and priced as an add-in option.

OPTION #6

Section 15.0 – Propulsion General

Subsection 15.2 – Machinery Control Booth

Other sections referenced: Subsection 1.13, 8.0, 15.8, 21.6, 41.0

Reference Drawings: 575-02-601, 575-02-201, 575-02-510

The Machinery Control Booth (MCB) shall be removed. All references to the MCB shall be removed and replaced with Engineer Control Station. The items referenced shall be removed as listed and priced as an add-in option.

OPTION #7

Section 30.0 – Fresh Water Cooling System

Subsection 30.1 – General

Subsection 30.4 – Coolant Transfer Pump

Reference Drawings: 575-02-536

The Coolant Transfer Tank and Coolant Transfer Pump and piping shall be removed as listed and priced as an add-in option.

OPTION #8

Section 36.0 – Maneuvering System

Subsection 36.1, 32.2 – General, Bow Thruster

Other sections referenced: Subsections 1.13, 15.10, 16.5, 30.0, 30.2, 36.3, 36.4, 36.5, 36.6, 36.7 and 40.0

Reference Drawings: 575-02-259, 575-02-568

The Bow Thruster and all of its components, support equipment and auxiliaries shall be removed as listed and priced as an add-in option.

OPTION #9

Section 38.0 – Electrical Systems

Subsection 38.1 - General

The ability to parallel operation between generators for uninterrupted, power transfer purposes shall be removed as listed and priced as an add-in option.

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ATTACHMENT A: Permissible Unfairness in Steel Welded Structure

ATTACHMENT B: Preliminary Elevator Arrangements Drawing

1.0 GENERAL REQUIREMENTS**1.1 BACKGROUND**

The Maine State Ferry Service provides year round ferry services in Penobscot Bay, Maine from the mainland to the following islands:

- Swan's
- Frenchboro
- Islesboro
- North Haven
- Vinalhaven
- Matinicus

Routes vary in distance from 3 miles to 23 miles with crossing times of 20 minutes and 2.25 hours, respectively.

The most important aspect of the operation is that it operates dependably 365 days per year. As the lifeline for the islands, the MSFS must ensure that the residents have safe, dependable, and reliable transportation for themselves and their goods on a scheduled daily basis.

1.2 INTENT

It is the intent of these specifications and associated drawings to define a new diesel-powered, steel-hulled passenger and vehicle ferry for the Maine State Ferry Service (hereafter referred to as “the Owner”), to provide a design package for USCG approval, and enable a shipyard to develop a fixed firm construction price and schedule. The vessel shall conform to the regulations of the United States Coast Guard for a passenger vessel, as prescribed in Code of Federal Regulations Part 46, Chapter I, and Subchapter H. Upon delivery, the vessel shall be issued a Certificate of Inspection by the US Coast Guard for operation on a lakes, bays, and sounds route, with a stability letter for operation on a partially protected route. The Contractor shall, under the terms of the contract and in accordance with these specifications, accompanying contract plans and contract guidance plans, build and deliver to the Owner at their pier in Rockland, Maine, an all welded steel passenger/vehicle ferry complete in all respects, fully equipped and outfitted by the Contractor in accordance with good shipbuilding practice, complying with all applicable requirements of regulatory bodies listed in Section 1.5.

These specifications, contract plans and contract guidance plans do not cover every detail of construction and equipment. Any material or parts, the omission of which would be detrimental to the seaworthiness or serviceability of the ferry and the inclusion of which is generally accepted as good shipbuilding practice, shall be furnished by the Contractor to the satisfaction of the Owner at no additional cost to the Owner.

The Specifications describe the features and functions of the ferry and together with other referenced documents, define the ferry with respect to required performance, equipment, outfitting, arrangements and structure. The contractor is responsible for carefully reviewing the specifications and drawings. Any item of work, material, outfit of piece of equipment shown on the contract drawings but omitted from these specifications, and

vice versa, shall be furnished by the Contractor without increase in cost to the Owner, as though they had been mentioned in or required by both. In the event of a discrepancy between the Specifications and any referenced document, it shall be brought to the attention of the Owner's representative. In general the order of precedence shall be:

1. The Specifications
2. USCG Rules
3. ABS Requirements
4. Contract Drawings
5. Contract Guidance Drawings

The shipyard shall furnish all labor, material and equipment and perform all operations required to construct, test and deliver the ferry as specified herein.

1.3 DEFINITIONS

The term "**Architect**" means Seaworthy Systems, Inc., Essex, CT.

Wherever terms such as "**as approved,**" "**to the approval,**" "**for approval,**" "**as directed,**" or "**as required**" are used without further qualification, the decision of the Owner's Representative is required. Where an item is required to be submitted for approval, work shall not proceed until notification of approval is received. In the event the item is not approved, rationale shall be provided, and work shall not proceed until a satisfactory and mutually agreeable resolution has been resubmitted and approved.

The term "**as shown on the drawings**", as used in these Specifications, means as depicted on the Contract and Contract Guidance Drawings listed in Tables 1 and 2, respectively.

The term "**Contract**" means the written agreement between the Owner and the Contractor covering the furnishing of material and the performance of work.

The term "**Contractor**" means the firm holding the prime contract with the MSFS for the construction of the ferry.

The term "**Contract Plans**" means drawings and other technical data prepared by the Architect that cannot be changed without a change to the construction contract and the change is approved by the Owner.

The term "**Contract Guidance Plans**" means drawings and other technical data prepared by the Architect that cannot be changed unless the change is approved by the Owner and that such a change will not affect the performance or USCG certification of the ferry.

The terms "**furnish, provide, install or fit**" mean that the Contractor shall furnish, install and connect in proper working order.

The term "**good shipbuilding practice**" means construction to soundly conceived, and engineered detailed working plans, prepared by the Contractor, incorporating the specified components and utilizing recognized shipbuilding construction and testing methods to ensure that the completed ship conforms to specification requirements. Inspection by the Owner's representative is for the purpose of verifying the proper

function of the Contractor's quality assurance measures and is not considered a substitute for in-process control of quality by the Contractor.

The acronym "**iaw**" means "in accordance with."

The acronym "**iwo**" means "in way of."

The term "**marine**" or "**marine quality**" means that an item shall be constructed of materials unaffected by moisture, sea spray, extremes of temperature or other hazards of the marine environment and is designed and constructed to perform its intended function, with ease and safety of operation and minimum maintenance, under the dynamic motions and cyclic loads imparted by marine operating conditions.

The term "**operationally tested**" means the system, equipment, or machinery shall be tested for proper operation, functioning of controls, safety devices and operating components as specified under service conditions and compliance with Regulatory Body requirements.

The term "**Owner**" means the Maine State Ferry Service.

The term "**Owner's Representative, Inspector**" means the company, person or persons authorized by the Owner to act on the Owner's behalf and make necessary inspections of the workmanship and materials provided by the Contractor.

The term "**provide**" means the purchasing, temporary storage, installation, fitting, inspection, testing and the necessary work required for systems, subsystems, equipment, its support systems and structure to operate for their intended purpose.

The term "**Regulatory Body**" means a Federal or State regulatory agency or an organization that is authorized by the agency to perform delegated regulatory functions on its behalf.

The term "**Regulatory Body Requirements**" means those regulations and interpretations issued by cognizant Federal or State agencies.

The term "**watertight**" means capable of preventing the passage of water through the structure in any direction under a head of water, for which the surrounding structure is designed.

The term "**weathertight**" means capable of preventing the penetration of water, even boarding seas, into the ferry in any sea condition.

ABS means American Bureau of Shipping.

ADA means Recommendations for Accessibility Guidelines for Passenger Ferries according to the 2008 draft of the Passenger Vessel Accessibility Guidelines dated June 26, 2008

AGMA means American Gear Manufacturer's Association.

AISI means American Iron and Steel Institute.

AMCA means Air Movement and Control Council.

AMR means auxiliary machinery space.

ANSI means American National Standards Institute.

ASHRAE means American Society of Heating, Refrigeration, and Air Conditioning Engineers.

ASME means American Society of Mechanical Engineers.

ASTM means American Society for Testing and Materials.

CFR means Code of Federal Regulations.

CRES means Corrosion Resisting Steel of suitable grade for marine use

EDG means Emergency Diesel Generator

EPA means Environmental Protection Agency.

FCC means Federal Communications Commission.

FDA means the Food and Drug Administration, U.S. Department of Health and Human Services.

FMEA means Failure Mode Effect Analysis

IEEE means Institute of Electrical and Electronics Engineers.

IES means Illumination Engineering Society.

MCR means Maximum Continuous Rating.

MCB means Machinery Control Booth

MSFS means the Maine State Ferry Service

NEC means the National Electrical Code.

NEMA means the National Electrical Manufacturer's Association.

NFPA means the National Fire Protection Association.

NFP (A) means the National Fluid Power Association.

NPS mean National Pipe Schedule

NVIC means Navigation and Ferry Inspection Circular issued by the USCG.

OSHA means the Occupational Safety and Health Administration.

QAWT means quick acting watertight.

72 COLREGS means the International Regulations for Preventing Collision At Sea, 1972.

SNAME means the Society of Naval Architects and Marine Engineers.

SSPC means the Steel Structures Painting Council.

USCG means the United States Coast Guard.

USPHS means the United States Public Health Service, U.S. Department of Health and Human Services.

USSG means United States Standard Gage.

WC means a water closet.

1.4 GENERAL DESCRIPTION

The ferry is intended for use on routes on Penobscot Bay, Maine. The vessel is a RO-RO passenger and automobile ferry with an open vehicle deck. It shall be powered by two geared diesel engines driving fixed-pitch propellers. There shall be two rudders at the stern.

The hull shall be of multi-chine form. It shall be of welded steel construction, transversely framed. Watertight bulkheads shall divide the hull into compartments, as shown on the General Arrangement (Drawing 575-02-601).

The main deck, longitudinally framed, shall be arranged to carry both large trucks and passenger automobiles. Vehicles shall be loaded and discharged at either end of the deck. The open space beneath the deckhouse shall be of sufficient height to accommodate trucks or over height vehicles. With one lane of trucks loaded on the ship's centerline, there shall be space on deck for two lanes of automobiles, one to either side between the truck lane and the deckhouse trunks.

The deckhouse, located amidships, shall be of welded steel construction and shall be transversely framed. The deckhouse shall span the full width of the vessel, and shall have a tunnel through it to allow the passage of vehicles. The tunnel shall be bounded by longitudinal bulkheads at approximately 14'-5" off centerline to port and starboard, between the main deck and the 01 deck, and by longitudinal bulkheads at 6'-0" off centerline to port and starboard between the 01 deck and the 02 deck. A trunk shall be formed to each side of the vessel, between the longitudinal bulkheads and the deckhouse side. Each trunk shall enclose stairways for access to the upper decks from the main deck, the exhaust casings, the elevator trunk and various stowage areas. The starboard trunk shall house a limited use, limited access (LU/LA) elevator serving the main deck, the 01 deck and the 02 deck.

Stairwells shall be fitted at the forward and aft ends of the deckhouse, outboard of the longitudinal bulkheads, for access to the 01 deck from the main deck.

The starboard side of the 01 deck shall house an ADA accessible enclosed passenger lounge and an ADA accessible passenger toilet space. Stairwells on the aft section of the 01 deck to port and starboard shall give access to the 02 deck. The pilot house shall be on centerline on the 02 deck.

The ferry has the following dimensions and capacities:

| | |
|-------------------------------|---|
| Length overall (over fenders) | 154 ft 0 in |
| Length, hull | 153 ft 0 in |
| Length, waterline | 145 ft 5 in |
| Length between perpendiculars | 137 ft 3 in |
| Beam, extreme (over fenders) | 39 ft 0 in |
| Beam, molded | 38 ft 0 in |
| Depth, molded | 14 ft 10 in |
| Draft, molded | 9 ft 2 in |
| Propulsion power | 1700 BHP |
| Service speed, calm seas | 11.5 knots |
| Displacement (full load) | 613 LT |
| Complement | 250 passengers, with 100 in enclosed lounge |
| Vehicle Capacity | 20 automobile equivalents (AEQ) of 18 ft x 8 ft |
| Diesel Oil (98%) | 6000 gallons |
| Potable Water (100%) | 1800 gallons |
| Sewage Tank (100%) | 1800 gallons |
| Coolant Dump Tank (100%) | 450 gallons |
| Waste Oil/Sludge (95%) | 450 gallons |
| Oily Water (95%) | 450 gallons |
| Lube Oil (95%) | 450 gallons |

1.5 REGULATORY BODY REQUIREMENTS

The vessel, as delivered, shall comply with the current applicable laws of the United States and regulations of the various Regulatory Bodies, including those listed below. All applicable sections of the most current editions of the following publications at the time of contract signing shall also be considered as having the same force as if they were included verbatim in the Specifications:

- a. USCG Subchapter H - "Passenger Vessels" (46 CFR Chapter I Subchapter H Parts 70-78)
- b. American Bureau of Shipping, Rules for Building and Classing Steel Vessels under 295 Feet in Length. (The ferry shall not be classed.)
- c. USPHS Publication No. 393, Handbook on Sanitation of Vessel Construction
- d. Navigation Rules International - Inland" (COMDTINST M16672.2D).
- e. ADA Recommendations for Accessibility Guidelines for Passenger Ferries
- f. IEEE-45 Recommended Practice for Electric Installations on Shipboard
- g. USCG NVIC 12-82 Recommendations on Control of Excessive Noise
- h. IES Recommended Practice for Marine Lighting
- i. Underwriter's Laboratories, Inc., Applicable Standards for Marine Electrical Equipment and Lighting Fixtures

- j. Federal Communications Commission
- k. USCG Admeasurement Rules (Domestic Tonnage). Tonnage calculations to be performed by Germanischer Lloyd.
- l. ASTM F1321-91, "Standard Guide for Conducting a Stability Test to Determine the Light Ship Displacement and Centers of Gravity of a Vessel."
- m. ASTM F1155, "Standard Practice for Selection of Piping System Materials"

The contractor shall be responsible for all regulatory body inspections including scheduling, fees, testing and final documentation, including, but not limited to:

- Certificate of Inspection
- Master Carpenter's Certificate
- Certificate of Documentation
- Regulatory Tonnage Certificate
- FCC Radio Station License
- Compass Deviation Card
- Stability Letter
- Certificate of Sanitary Construction
- State of Maine Elevator Certificate

If increased contract costs result from the Contractor's compliance with any regulatory body requirement which was not in effect as of the date of the Contractor's latest price proposal preceding the award of a contract (or any Letter of Intent to award a contract, should such precede an award), then such work shall be subject to the provisions of the Contract regarding changes.

The vessel shall be designed, constructed, and admeasured to obtain a U.S.domestic gross tonnage less than 500 Gross Tons.

1.6 DRAWINGS

The following contract drawings in Table 1.61 shall be used in conjunction with these specifications in order to define the functionality of the vessel. Any departure from these drawings must be specifically approved by the Owner.

Table 1.61

| | <u>Title</u> | <u>Drawing Number</u> |
|----------------------|--------------|-----------------------|
| Lines Plan | | 575-02-001 |
| General Arrangements | | 575-02-601 |

The Contractor shall use the following drawings in Table 1.62 as guidance in the construction of the ferry.

| <u>Title</u> | <u>Drawing Number</u> |
|--|-----------------------|
| Weight Estimate | 575-02-004 |
| Stability Calculations | 575-02-005 |
| Structure Below Main Deck | 575-02-111 |
| Deck Scantlings | 575-02-131 |
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| Lighting Plan | 575-02-305 |
| One-line Diagram of Electrical System | 575-02-320 |
| One Line Diag. of 24 VDC Electrical System | 575-02-321 |
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| Internal Communications System Diagram | 575-02-431 |
| Alarm System Diagram | 575-02-436 |
| Vents and Fills System Diagram | 575-02-506 |
| Domestic Heating System Diagram | 575-02-511 |
| Engine Room Ventilation System Diagram | 575-02-510 |
| Domestic Ventilation System Diagram | 575-02-514 |
| Fire, Sprinkler, and Washdown System Diagram | 575-02-521 |
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| Sanitary Gray and Black Water System Diagram | 575-02-528 |
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| Anchor Arrangement | 575-02-581 |
| Mooring Plan | 575-02-582 |
| Fire Control and Safety Plan (Preliminary) | 575-02-583 |
| Waste Oil and Oily Water System Diagram | 575-02-593 |
| ADA Details | 575-02-602 |
| Insulation Plan | 575-02-635 |
| Pilot House Arrangements | 575-02-661 |

Changes to the plans shall not be made without the approval of the Owner and/or Architect in writing. The Contractor shall submit drawings and all other materials to the USCG for approval of the design. The Contractor shall provide all detail working drawings necessary for the construction of the ferry to suit their own construction methods. It should be noted that all system drawings are schematic and generally show where systems should be run. The Contractor shall be required to develop the details of

the systems and how they are to be run. The Contractor is provided with a set of preliminary hull and superstructure lines and offsets. It is the Contractor's responsibility to fair the lines as needed for construction.

The Contractor shall develop a docking plan in AutoCAD 2004 format showing the location of all as-built underwater appendages, such as rudders, shafting, transducers, drain plugs, grid coolers, anodes, tank boundaries, framing, sections and profiles for keel, bilge blocks or railway blocking. If there are substantial changes, the Contractor shall supply the Owner with as-built versions of the plans in Tables 1 and 2 above and with any detailed drawings developed during construction.

A preliminary construction schedule shall accompany the Contractor's bid. Within three weeks of signing a construction contract, the Contractor shall supply a detailed construction schedule.

1.7 SAFETY REQUIREMENTS

Hazardous onboard operating conditions shall be prevented by the safe arrangement of machinery and equipment. Protection of personnel against electrical and mechanical operating hazards shall be provided. Shafting, couplings, gears and similar rotating or moving parts shall have protective guards installed for the protection of personnel. Such protective guards shall be removable without dismantling the surrounding machinery. Personnel shall be protected from contact with surfaces 125 deg F or hotter by means of insulation, stand off guards or handrails. All equipment, machinery and its installation shall comply with OSHA requirements as much as possible.

1.8 CARE OF FERRY DURING CONSTRUCTION

All parts of the ferry and equipment shall be maintained in a satisfactory condition during the entire period of construction and fitting out. All dirt, chips, scrap material and other foreign matter shall be cleaned out at least once a week during construction. Water shall not be allowed to remain on decks or in the bilges of the ferry. Tanks and voids shall be cleaned and preserved before being closed. Welds shall be thoroughly cleaned. Areas where welding shall be difficult or impossible to view after construction shall pass inspection by the Owner's representative prior to the closing of such areas.

Special measures shall be taken by the Contractor to minimize damage incident to storage, installation and construction and to prevent corrosion or other deterioration, especially to all unpainted or polished surfaces and moving parts. All equipment shall be protected against grit and sand blasting. All damage and deterioration of the ferry, its parts, fittings and outfit that were preventable by the use of covers, wrapping, heaters, humidity control devices and other such means shall be corrected and repaired by the Contractor at its expense.

Equipment, prefabricated parts, furniture and materials which are stored in warehouses or elsewhere during the construction period of the ferry shall be thoroughly examined for damage and shall be free of debris, insects and rodents before being placed onboard. All materials, equipment, machinery and other items, whether ordered by the Contractor or furnished by the Owner shall, when received by the Contractor, be marked by the

Contractor for use only for this contract and installed or stowed as appropriate. Stowage shall be segregated from materials for other shipyard activities. Stowage for equipment shall be covered, with temperature and humidity control to prevent deterioration, as required and shall be patrolled or otherwise protected against fire, theft, vandalism and the introduction of foreign substances.

The Contractor shall provide and maintain an adequate watch for the ferry until delivery so as to protect the ferry from damage, fire and pilferage. All damage and all items pilfered shall be repaired or replaced by the Contractor without cost to the Owner. Flammable materials shall not be stored onboard the ferry in such a manner that a serious fire hazard is created, and special care shall be given to prevent the possible outbreak of fire. Where torch cutting or welding is being carried out in the vicinity of combustible materials, a fire watch, whose sole duty shall be to watch out for fires and keep firefighting equipment on hand, shall be constantly on duty.

The Contractor is to pay all expenses including insurance, regulatory fees, harbor and pilotage fees, trials expenses, delivery etc., prior to delivery to the Owner.

1.9 MATERIALS AND WORKMANSHIP

All material and equipment utilized in the construction and outfitting of the ferry shall be new and suitable for the marine environment. Equipment and components shall be selected, installed and tested in accordance with manufacturer's recommended practices and installation requirements. Equipment and components shall not be used on the ferry that in any way would void the manufacturer's warranties. The contractor shall obtain all mill or manufacturer's certificates and provide copies to the Owner. A "Buy America" procurement policy is required for the entire ferry except for electronics and a few selected items.

The number of different types, sizes and models of equipment and components used on the ferry shall be limited to the minimum practical. System components such as pumps, motors, fittings and valves shall be standardized throughout the ferry as much as possible to limit support and maintenance requirements. Serviceability, maintenance and ease of purchasing spare parts in the Rockland, Maine area shall be included when choosing equipment. It is the intention of the Owner to standardize, as much as possible, equipment and spares across its fleet.

Where an item specified is followed with the words "or equal" the salient characteristics of the item will be provided and the Contractor may substitute an equivalent piece of equipment with regard to form, fit, function and performance if approved by the Owner. It is the Contractor's responsibility to provide all necessary documentation supporting an "or equal" claim.

All equipment shall be selected to ensure maximum reliability, maintainability and availability.

Equipment and material selection shall be based on the following precedence:

1. Owner's desire to standardize equipment across its fleet

2. Proven marine service record
3. Commercially available spare parts in the Rockland, ME region
4. Ease of maintenance
5. Minimum number of special tools required for repair
6. Minimum life cycle cost
7. Manufactured in the USA

All bolt heads and nuts shall be of hexagonal standard type in accordance with ANSI standards. Lock washers and nuts shall be provided wherever assemblies or items are bolted to the ferry's structure, except where the individual sections of the Specifications require more positive locking arrangements. All exterior fastenings, all fastenings that may be in contact with salt water or all connections of dissimilar materials shall be CRES with appropriate isolation from dissimilar metals, if necessary. All fastener threads and pins to be greased with "Neverseize" compound.

If the Contractor subcontracts construction of the hull and/or other major components, full details of the experience, capability and financial standing of the proposed subcontractor are to be submitted to the Owner upon request, well before any commitment is made. Care is to be taken to ensure that any subcontracts adequately protect the Owner's interests.

1.10 INSPECTION

The ferry is to be constructed and equipped under the supervision and inspection by the Owner's representative and the USCG. The Contractor shall provide a suitable air-conditioned office space, complete with furniture, file cabinets, cleaning service and a telephone line. Access shall be given to the Owner's representative at all times during normal business hours for the purpose of supervising work, inspecting materials and inspecting workmanship. The Owner's representative shall have the authority to reject any material or workmanship, that in their opinion, is defective, unsuitable, or that does not conform to the requirements of these specifications. Progress photographs shall be forwarded periodically on a weekly basis to the Owner and his representative.

1.11 LAUNCHING AND DRY-DOCKING

The Contractor shall be responsible for the satisfactory launching of the ferry. If damage is suspected or found during or after launching, the ferry shall be dry-docked for survey and correction at the Contractor's expense. If the ferry is launched more than 60 days prior to delivery, it shall be dry-docked to have the sea chests checked, bottom cleaned and the bottom coating touched up to the satisfaction of the Owner's representative.

1.12 INCLINING EXPERIMENT

Prior to delivery an inclining experiment shall be conducted by the Architect in accordance with reference (l) in Section 1.5. The Builder shall provide the necessary resources, inclining weights, personnel and cooperation to assist the Architect in the stability test.

1.13 TESTS AND TRIALS

All tests are to be performed in the presence of the Owner or his representative and, where appropriate, the USCG. Reasonable advance notice is to be provided for all tests. All shipboard equipment and systems shall be commissioned in accordance with the manufacturer's recommendations.

Through hull fittings, through bulkhead fittings, through deck fittings, through house and upper deck fittings are to be tested with a high-pressure hose in accordance with 46 CFR Subchapter H.

Piping systems shall be tested in accordance with 46 CFR Subchapter H or to a minimum of 1.5 times the system working pressure. Pipes, joints and fittings shall be thoroughly checked for leaks. Piping systems shall be thoroughly flushed before attachment of machinery or equipment into the system. The final flushing fluid shall be the fluid normally conveyed by the piping system. Main engine and generator cooling systems including heat exchangers are to be flushed with fresh water. All leaks shall be corrected prior to placing any system in service.

Electrical systems shall be tested in accordance with 46 CFR Subchapter H or for continuity and insulation resistance to levels specified in IEEE 45 or the NEC. All alarms, pressure transducers and level indicators to be tested for functionality, calibration and set points. Insulation and continuity tests shall be made on branch circuits and feeders prior to the connection of consumers that may be damaged during the course of testing such as electronic equipment. Feeder and branch circuit insulation tests shall be made with the common ground of the AC and DC systems disconnected.

All electrical equipment enclosures shall be electrically bonded to the ferry's hull. The Contractor shall also conduct a bonding survey and a galvanic corrosion survey after the performance trials and when the Contractor deems the ferry complete.

Dock trials are to be carried out to ensure the correct performance of all equipment. Propulsion and other engine room machinery, control systems and alarm systems, etc., are to be thoroughly tested. All piping, ventilation and electrical systems etc., shall be thoroughly tested. A complete check is to be made of all valve and switch nameplates.

The Contractor is to pay for the fuel, lubricating oil and other consumables required for the trials. The trials condition, quantity of fuel, water etc., is to be agreed upon with the Owner in advance. The Contractor is to engage technical support personnel from the engine manufacturer and other subcontractors and equipment suppliers as necessary. The Contractor is to provide the crew necessary, including the captain, to perform the trials.

The sea trials are to be carried out in accordance with the procedure approved by the Owner and the USCG and are to include as a minimum:

- a. Speed Trials:
 - 1 double run at 85% power for a distance of 5 nautical miles in each direction in a depth of water exceeding 5 times the ferry's normal draft.

- 1 double run at 100% power for a distance of 5 nautical miles in each direction in a depth of water exceeding 5 times the ferry’s normal draft.
 - 1 double run at 100% power using the port engine only for a distance of at least 1 nautical mile in each direction in a depth of water exceeding 5 times the ferry’s normal draft.
 - 1 double run at 100% power using the starboard engine only for a distance of at least 1 nautical mile in each direction in a depth of water exceeding 5 times the ferry’s normal draft.
- b. Main engine performance analysis:
- Emergency Stop from 100% ahead power to 100% astern power
 - Astern running for 15 minutes minimum duration at 85% power
 - Continuous full power endurance trial for 4 hours at 85% power
 - Steering gear trials and turning circles ahead to right and left at various power levels up to and including 100% power.
- c. Bow thruster performance at zero ahead speed, P/S turning (OPTION ITEM #8)
- d. Gyrocompass and autopilot functionality
- e. Noise and vibration survey

During the trials the Owner shall conduct noise and vibration surveys. Any excessive noise or vibration shall be corrected by the Contractor before acceptance of the ferry by the Owner. Noise levels shall not exceed those listed in NVIC 12-82, *Recommendations on Control of Excessive Noise* as follows:

| | |
|---------------------------|---------------------------|
| Pilot House | 65 dB(A) |
| Passenger/Crew Spaces | 72 dB(A) |
| Heads | 72 dB(A) |
| Engine Room | 110 dB(A) |
| Engine Room Control Booth | 75 dB(A) (OPTION ITEM #6) |
| Open Decks | 75 dB(A) |

The engine room control booth bulkheads shall be covered by sound absorbing linings. The enclosure itself shall be installed on resilient mounts. (OPTION ITEM #6)

Vibration levels on all structure (decks, bulkheads, casings, overheads, etc.) bounding enclosed and exposed normal passenger and crew spaces shall not exceed a root mean square velocity of 0.100 inches/second in the vertical, longitudinal or transverse directions, each considered separately.

Upon completion of the sea trials, with the ferry at the Contractor's dock or other safe berth, an examination is to be made of the main engines and gearboxes, etc. Oil samples are to be drawn from each piece of equipment and sent to an approved oil analysis company. Components are to be opened and inspected if the Owner has any reason to deem this necessary.

The Owner is to be informed of any test and trial dates for all major items at least one week prior to the tests being conducted. On completion of the trials program and again on delivery, a survey is to be made of the ferry by the Owner, and any defects which may have developed or any work found to be incomplete is to be corrected and made good by the Contractor before acceptance of the ferry, unless otherwise agreed to by the Owner. Any unsatisfactory test is to be repeated after the correction of any defects to the satisfaction of the Owner.

1.14 DELIVERY

The Contractor shall be responsible for delivering the ferry to the Maine State Ferry Service pier in Rockland, Maine with full fuel tanks and ready for service in all respects to be able to immediately start carrying passengers, free of all debts and liens. All tanks, bilges and other spaces are to be clean and thoroughly cleared of dunnage, scrap, refuse and dirt. Special care is to be taken that all surfaces in the tanks, piping systems and machinery are clean and free of any foreign material; that all painted surfaces are touched up and that all machinery is in perfect running order with any deficiencies corrected.

1.15 DOCUMENTATION

The Contractor shall prepare a technical manual consisting of all of the purchase orders, invoices, original manufacturer's operating and service manuals, preventive and corrective maintenance manuals and parts lists/sources for all of the ferry's mechanical, electrical components and equipment. Steel mill certificates shall be provided, attesting to the fact that the steel was manufactured in the United States. During the construction process, all purchase orders and invoices shall be made available to the Owner for inspection. The Contractor shall also provide electronic versions of any revised Architect's drawings to reflect any differences due to as-built conditions.

1.16 WEIGHT CONTROL

Final light ship weight and centers are very important to the performance of the ferry. The contractor shall undertake a weight control program that includes the updating of the Architect's weight estimate on a periodic basis to reflect actual installed weights of equipment and design changes. Scantlings shall not be changed, neither made lighter nor heavier than what is shown on the drawings, without the approval of the Architect. Below main deck equipment locations shown are approximate. The contractor is to

ensure that the final locations of this equipment and all auxiliary piping and ducting throughout the hull are located to minimize list.

1.17 SPARES (OPTION ITEM #1)

Main propulsion engine and genset manufacturer's recommended spares for one year for each engine shall be supplied. Two spare propellers shall also be supplied, one spare propeller of each hand. All spares to be new and packaged for preservation and storage, as required.

2.0 STRUCTURE

2.1 MATERIALS

The ferry is to be all welded with steel plates and shapes meeting ABS material specifications. Up to 1/2" thick plate, ASTM A36 steel is acceptable. All scantlings have been sized in accordance with reference (b) of section 1.5 and shall be installed as shown on the Contract Guidance Plans. Changes to scantlings are not to be made without the prior consent of the Architect. All members shall be radius sniped and a minimum of the lesser of 1.5" or 25% of the depth of the member limber holes shall be provided wherever needed to permit either drainage or venting of all tanks, compartments, pockets and voids.

2.2 WORKMANSHIP

Particular care shall be taken to ensure fair lines, fair plate panels, adequate fit up and the proper alignment of structural members. This ferry is in the public's eye during its operations and a fair hull and superstructure are of primary importance to the Owner. All structural members and sight edges shall be fair and smooth for good appearance. All corners and plate edges shall be smooth and free from defects that could cause damage to equipment or injury to personnel. Sharp or ragged edges of all structural work, access holes, etc. shall be removed. Attention shall be given to the neatness of structural brackets and clips, to the sniping of angles and the cutting of shapes. All structural corners exposed to the passengers or crew shall be radiussed. All corners of openings in plate for doors, windows or trunks shall be radiussed or relieved to prevent stress concentrations.

Direct attachment of fittings to watertight or oil-tight structure shall be by welding only. There shall be no unsupported ends of frames or brackets landing on plate that shall produce hard spots. To ensure sound welds and structural continuity, all structural pieces shall be fitted up and aligned within the ABS tolerances prior to welding.

Lightening, air, drain and limber holes shall be neatly cut with all notches, burrs and ragged edges removed with radiussed corners. Where holes are made in decks, shell or strength members, suitable compensation in the form of insert plates or rings and doublers shall be added. Where changes in structural continuity are unavoidable, suitable brackets are to be fitted. Trunks and coamings in general shall be cut with a minimum corner radius of at least 3", unless otherwise specified.

2.3 WELDING

All welding procedures, methods, electrodes and inspection shall be in accordance with the ABS and USCG requirements. All welders are to be certified by the USCG. All finished faying surfaces exposed to the weather, where not already joined by weld material, shall be sealed with a covering pass of weld bead.

No welding is to be done on shell plating or other structure next to or within 2" of the water while the ferry is afloat. No welding is to be allowed when the air temperature is lower than 20 deg F, when surfaces are wet or exposed to rain, snow or high winds or when operators are exposed to inclement weather conditions that shall impair good workmanship. Any moisture present at the point of welding shall be driven off by heat before welding commences. Materials to be welded shall be free of paint, grease and oil.

Welds shall be uniform and properly sized. Unsatisfactory welding shall be chipped out and re-welded to the satisfaction of the inspector. The striking of an arc on any principal hull plate surface is prohibited unless the surface upon which the arc was struck is to be incorporated into the welded joint. Marks left by an accidental arc strike shall be ground out to a smooth contour, taking care that the plate thickness is not reduced. Where temporary welds have been made, the remaining weld material shall be ground smooth and flush with the adjacent surface. Any pad eyes or other temporary brackets, etc. utilized in the construction of the ferry are to be carefully removed after use, the remains ground off and the surfaces made good. In no case are they to be knocked off by hammers or other means that can damage the steel to which they are attached.

Before making a second or additional weld pass, all slag shall be removed and the weld and base metal shall be back gouged.

2.4 WELDING SCHEDULE

The Contractor shall employ a welding sequence schedule to ensure that all surfaces are fair, free from buckles, bulges and other surface irregularities, to the satisfaction of the Owner. The welding sequence shall be carried out in such a manner as to compensate for creeping and shrinkage as the work progresses, holding distortion to a minimum. Locked in stresses shall be avoided or relieved as much as possible. Weld distortion is to be corrected to within the tolerances stipulated in Attachment "A". Welding of structure to decks is to be very carefully considered to avoid any plate buckling or permanent stiffener deflection that may cause the puddling of water and an uneven walking surface for passengers and crew.

2.5 HULL PROTECTION DURING OUTFITTING

During the period between launching and delivery, rigid control of welding and grounding shall be maintained. The ferry shall be grounded for welding by means of a strap running from the hull to the shore.

2.6 WELD INSPECTION

All questionable welds in the hull and superstructure designed to carry primary stresses or to form watertight or oil-tight joints shall be subject to non-destructive inspection upon request of the Owner or the USCG. Defective welds shall be rejected and must be

corrected. Any welds shown to have any cracking, incomplete fusion, overlapping or inadequate penetration shall be rejected and must be corrected. Fuel oil tank welds shall be tested by filling each tank in turn to the level of its overflow and then inspecting all welds for leaks. The Inspector is to approve all the fuel tank welds after the tests.

2.7 STRUCTURE

Hull lines shall be as shown on the Lines Plan (Drawing 575-02-001). The hull lines shall be carefully lofted and faired by the Contractor.

The arrangement and thickness of plating shall generally be in accordance with the Structure Below Main Deck Dwg. No. 575-02-111. The plating shall be increased in thickness as appropriate in way of hull penetrations.

The vessel shall be of open-floor construction, as indicated in Dwg. No. 575-02-111. The bottom structure shall consist of a center vertical keel and side keelsons fabricated from plate. A flanged plate floor shall be fitted at every frame, intercostal between the keel and keelsons. Floors and side frames shall be efficiently connected by brackets as indicated on the structural drawings.

Continuous welding of the hull structure shall be ensured by means of scallops in web frames, floors, etc. Adequate drain holes and air courses shall be provided in the bottom structure to ensure the free movement of liquid to suction or drains, or of air to vents; however, the bottom structure adjacent to each main engine and to the bow thruster engine shall be made oiltight and watertight, so as to contain any liquids that may drip from the engines.

A centerline skeg shall be laid out and constructed as indicated in the structural drawings. The skeg shall be an integral part of the hull structure. Skeg voids shall be fitted with bronze fill and drain plugs.

A chain locker shall be constructed of the size and in the location indicated on the Structure Below main Deck drawing (Dwg. No. 575-02-111). The locker shall be bounded by watertight structure. The locker shall be fitted with a removable perforated steel floor to form a sump above the bottom. Provisions shall be made to connect the sump into the bilge system. Heavy reinforcement shall be provided in way of the bitter end connection. A QAWT hatch shall provide access to the chain locker.

Pillars and stanchions shall be fitted generally as shown on the structural drawings. All necessary cap plates, bearing plates, and chocks shall be provided.

The hull shall be divided by transverse watertight bulkheads as shown on the drawings. The bulkhead at frame 7 shall be considered the collision bulkhead for regulatory purposes. It shall have suitable scantlings, and shall have no penetrations except as permitted by the regulatory bodies.

Bulkheads shall have vertical stiffeners, as shown on the Structure Below Main Deck Dwg. No. 575-02-111. Brackets shall be fitted at the bottom of stiffeners to connect them efficiently to the shell and next transverse bottom frame and at the top to connect them to the main deck longitudinals.

Hull bulkheads shall be tested to the requirements of the Owner and the regulatory bodies prior to launching the vessel, after all welding is complete prior to painting and fittings have been put into place. Where leaks are found, they shall be repaired to the satisfaction of the Owner and the regulatory bodies, and the areas re-tested.

The arrangement and location of tanks shall generally be as shown on the General Arrangement (Dwg. No. 575-02-601) and Machinery Arrangement (Dwg. No. 575-02-201). All tanks shall be tested to the requirements of the Owner and the regulatory bodies prior to launching the vessel, after all welding is complete prior to painting and fittings have been put into place. A dry survey of each tank shall be carried out and defects remedied prior to water or air testing. All tanks of 300-gallon capacity or greater shall be fitted with one or more manholes of standard size.

The Main Deck throughout the main portion of the hull shall be framed longitudinally. Scantlings shall be in accordance with the Deck Scantlings Plan (Dwg. No. 575-02-131). In way of mooring fittings, the main deck shall be suitably reinforced.

The deck shall be fitted with recessed tie-down sockets in way of the center vehicle lane, so those vehicles may be secured with chains. Tie-downs shall be evenly spaced along the deck, 5 feet off C.L., P/S on centers of approximately 8 feet, from amidships to 15 feet from the bow and stern.

The deckhouse and all deck erections shall be positioned as shown on the drawings. The deckhouse shall be steel plate with rolled angle stiffeners. Deck beams shall be rolled angles. All scantlings and dimensions shall be as shown on the Superstructure Scantling plan (Dwg. No. 575-02-151).

The deckhouse shall be fabricated of large panels following an approved welding sequence. The panels shall be well supported and otherwise stiffened during fabrication to produce smooth finished surfaces, free of buckles, bulges, and wrinkles.

The boundaries of the deckhouse shall be of watertight construction and shall be hose tested for tightness. The machinery casings shall be of continuously welded, fume and flame tight construction.

The corners of all openings in the deckhouse shall be radiussed to reduce stress concentrations.

Steel plate bulwarks shall be fitted at the main deck level, as shown on the Superstructure Scantling Plan (Dwg. No. 575-02-151). The main deck bulwarks shall be open at the fwd and aft ends to permit the loading and unloading of vehicles. Bulwark stays shall be fabricated from closed sections.

2.8 CHOCKS AND BRACKETS

All discontinuous girders and transverses shall be properly bracketed to ensure continuity between the transition from one shape to another. All stanchions shall be properly aligned with structure and/or other stanchions in order to transmit loads. All stanchions shall be placed on a heel plate at its base and a properly bracketed top plate at the head is to be provided. Chocks shall be fitted in the supported member above the stanchion in

line with the stanchion. The tops of main deck and second deck superstructure side shell transverse vertical frames shall be efficiently attached to the corresponding transverse deck frame with a plate bracket.

2.9 THROUGH DECK AND THROUGH HULL PENETRATIONS

The watertight integrity of all through deck or bulkhead piping penetrations is to be maintained by welding the through pipe to a sch 80 pipe sleeve. All below main deck overboard penetrations are to be reinforced with a plate doubler of equal thickness to the shell plate.

2.10 FOUNDATIONS

The contractor shall provide heavy-duty steel foundations for all machinery and equipment. All foundations shall be well-limbered and easily accessible for painting and cleaning. Abrupt discontinuities are to be avoided. Foundations shall be heavy enough to transmit forces adequately to main ship's structure without undue movement or vibration. Main propulsion engine foundations shall be properly aligned with the ship's structure to prevent stress concentrations. Brackets shall be fitted iwo ordinary frames, with additional chocks under the mounting locations. All welding of the foundations is to be double continuous. Resin-type poured chocks shall be fitted between machinery and foundations.

Sound foundations and seats of good design shall be provided for pumps, motors, minor tanks, and other major equipment items in the various auxiliary systems.

2.11 DECK GUARD

A 6" sch 80 split pipe guard is to be fitted at the main deck level, around the entire main deck. The guard is to have bronze drain plugs at low points and fill/vent bronze plugs. The void is to be coated with float-kote or similar preservative.

3.0 DOORS, HATCHES, MANHOLES AND WINDOWS

3.1 DOORS

Doors shall be provided generally in accordance with the door schedule. Final door detail dimensions are to be developed by the Contractor. Doors shall be operable from both sides, complete with hardware, latches, holdbacks and rubber snubbers as required for each door. Except where protected by deck overhangs, exterior doors shall be fitted with continuously welded watersheds of 1½" x ¼" flat bar. All door frames shall be reinforced iwo hardware. Doors capable of being locked shall be at the direction of the Owner. Each keyed door shall be supplied with two keys and brass tags with the name of the space served inscribed thereon. All door locks shall be master keyed.

3.2 BULKHEAD WATERTIGHT DOORS

Six (6) hinged, quick-acting watertight doors shall be installed on the level below main deck. The doors shall meet the requirements of ASTM F1069 and F1073. There shall be indicator lights in the bridge showing the open/close position of each door.

3.3 DECK HATCHES

Five (5) spring loaded hinged, flush, quick-acting watertight hatches shall be installed on the main deck, as shown on the General Arrangement (Drawing 575-02-601) and the Deck Scantlings Plan (Drawing 575-02-131). Deck hatches shall have a clear opening of 20" diameter. Hatches shall be of carbon steel construction, installed using steel welded ring flanges. Hatches shall be operated by a hand wheel from below and by a T-handled wrench from above. Hatches shall be suitable for the maximum tire loads imposed upon the deck.

Three (3) 24" clear opening round Freeman Marine Equipment steel flush quick acting Model 24 DI (or equivalent) watertight hatches shall be installed in the main deck, one above the CO₂ bottles and one for access into the chain locker, and one for access to the forepeak as shown on the General Arrangement (Drawing 575-02-601). Hatches shall be suitable for the maximum tire loads imposed upon the deck. One (1) 18" clear opening round Freeman Marine Equipment steel flush quick acting Model 18 DI (or equivalent) watertight hatch shall be installed in the pilot house deck for access to the void underneath.

3.4 MANHOLES

Raised oil and water tight bolted plate manholes shall be provided for the fuel oil, sewage and potable water tanks. The manhole covers shall have a 15" x 23" clear opening, reinforcing ring and be gasketed to maintain the integrity of the boundary. The potable water tank construction and details shall meet the requirements of the USPHS. Covers shall be the same thickness as adjacent tank plate. Covers shall be fitted with a lifting handle, CRES studs and nuts. Ladder rungs of solid round bar shall be provided as necessary on the inside and outside of the tanks for proper access to the tanks and inside of the tanks.

3.5 PLATE ACCESSES

Flush plate accesses shall be provided in the inboard P/S vent uptake trunks at all levels and the engine room air P/S intake trunks at the main deck level. The accesses shall maintain the watertight and fire integrity of the boundaries.

3.6 WINDOWS

Opening and fixed windows shall be located and installed where shown on the plans. A preliminary window schedule is shown on Dwg. No.575-02-635. Centers of windows shall be 63" above the finished deck. All windows shall be boxed in with 18 USSG stainless steel sheet and fitted neatly to the surrounding interior sheathing. All windows shall be proven fully weather-tight by hose testing. All windows cut outs shall have rounded corners. All opening windows shall be fitted with childproof bars.

The design of the windows shall allow the glass to be replaced from inside the vessel. Glass shall be mounted in the frames in a manner that will prevent vibration and rattling in any position. Window frames shall be true and fair and the metal work around the openings in which they are set shall also be flat and fair so that the frames can be

installed and secured without distortion.

A double glazed, fire-rated soundproof window of 36"x48" size shall be fitted in the machinery control enclosure.

All house-front windows on the 01 deck below the pilot house shall be fitted with fixed blinds to block the transmission of light during night operations.

3.7 WINDOW WIPERS

The center three forward-looking pilot house windows and the centerline window at the aft end of the pilot house are to be fitted with Cornell-Carr (or equivalent) window wiper assemblies, outboard mounted, Cornell-Carr Dwg. No. CC-5100.

Each window wiper shall be controlled by an individual, variable-speed type control box in the pilot house.

4.0 STAIRS & LADDERS

4.1 STAIRS

All internal and external stairs, including the engine room, are to be fitted with non-slip treads. All stairs and ladders are to be constructed of steel and have evenly spaced treads and risers, with riser and tread dimensions so as not to have an angle greater than 40° from the horizontal.

Each stair shall be fitted with double underslung two-course handrails. The backs of all open stairs shall have portable, galvanized sheet metal shields. The rails shall have a hand clearance of at least 2 1/2" and shall extend not less than 36" above the deck to which access is given. Ladders shall have a minimum head clearance of 84". All exterior stair openings are to be fitted with 1/4" x 2" flat bar coaming rain shields where they are exposed to the weather.

The engine room is to be fitted with a removable steel inclined stair, with a maximum inclination of 50 deg. Ladder to be fitted with a dirt shield, Wooster treads and railings. A steel padeye of 5000 lb SWL with a factor of safety of 5 is to be installed in the overhead of the engine room access.

4.2 LADDERS

Steel vertical ladders of rugged construction shall be provided for access to escape hatches beneath the main deck, the pilot house top, inside the exhaust uptakes and two under deck hatches.

Vertical ladders shall be recessed under decks no more than necessary to clear the opening. Hand grabs shall be provided at the heads of ladders where necessary. Hand grabs shall be provided up the main mast.

The fixed vertical steel ladders shall be constructed iaw *ASTM F 840-83, Standard Specification for Ladders, Fixed, Vertical, Steel, Ship's*, Type 1, Normal duty. Top rails are to be continued to the pilot house compartment overhead in a 180 deg bend.

5.0 HULL FITTINGS

5.1 RAILS AND GRATINGS

Removable expanded metal rails 42" high, are to be fitted to the 01& 02 deck perimeters iwo decks open to passengers. Rails are to be connected with neatly radiussed corners to form a continuous railing. All welding on rails is to be ground smooth. All removable rails and bulwarks are to be numbered sequentially with permanent weld bead. ADA compliant rails shall be fitted on all stairwells, both sides, and other locations as shown on Dwg. No. 575-02-602. All bulkhead mounted and stairwell rails are to be underslung with "L" shaped mounting brackets.

The 02 deck rails iwo the pilot house wings, forward of the pilot house around the deck perimeter and inboard of the life rafts shall be three course, 39.5" high, with 2" sch 40 stanchions, and 1-1/2" sch 40 middle and lower courses. The deck to lower course distance is to be 9" and the lower course to middle course and middle course to top course distances are to be 15" each. The rails inboard of the life rafts will have a hinged rattle proof gate for access to the IBA's. 42" high portable stanchions with deck sockets and two course CRES wire rope rails and fittings shall be fitted iwo the rescue boat and davit.

Deck plates are to be provided throughout the below main deck spaces iwo the engine room, AMR's, passageways through void spaces and iwo the bow thruster and steering gear to provide a good, safe access for convenient operation and maintenance of machinery and valves. The engine room and AMR's shall be fitted with continuous floor plates. Floor plates shall be fitted within 2" of all equipment requiring servicing.

Materials for floor plates shall be 1/4" aluminum checker plate supported by steel angles, secured by countersunk stainless-steel screws. All floor plates, gratings and supporting angle bars shall be portable where required for proper maintenance of equipment. Angle bars shall be installed toe-up to form a coaming at the sides.

Additional two course safety rails shall be installed and fabricated from 1½" sch 40 carbon steel pipe and stanchions along the void passageways. Rails shall be made portable where necessary to facilitate machinery removals.

Portable plates with flush type grabs and hinges shall be provided for access to valves and strainers below the floor plates. Valve hand wheels and rising stems shall not protrude above the floor plates. Supports and coaming angles shall be bolted where they interfere with the overhaul or removal of machinery.

5.2 GUARDS

Suitable covers, guards or rails are to be installed iwo all exposed and dangerous locations or machinery, such as rotating machinery or deck openings.

5.3 MOORING FITTINGS

Mooring fittings shall be located on the main deck as shown on Dwg. No. 575-02-601. The deck underneath shall be suitably reinforced with flat bar iwo the deck fitting.

The following mooring fittings shall be provided and installed as shown on the Main Deck as indicated on the Mooring Plan (Dwg. No. 575-02-582) and (Dwg. No. 575-02-601).

- Three (3) 15" diameter mooring rings
- Eight (8) 21" mooring cleats

Mooring cleats shall be of cast construction. All welds and rough surfaces are to be ground smooth to prevent line chafing.

5.4 GROUND TACKLE

A 750 lb workboat anchor shall be stowed in chocks in a bulwark pocket on the main deck forward, port side. The anchor shall be set on a sloped plate at the bottom, suitably stiffened, so that the anchor falls overboard easily when the anchor is released. The releasing mechanism shall consist of a "R.A.M." hook release, 3810 kg SWL. The sloped plate shall also contain a closed Panama chock through which the anchor chain shall travel. Two shots of 7/8" Grade 3 stud link ABS certified marked anchor chain shall be stowed in the chain locker, including joining shackles, swivel and connecting link. The bitter end of the anchor chain shall be attached to a pin that can be driven out under load in order to release the anchor. The bitter end pin arrangement shall be designed to meet the proof load of the chain and fitted into a WT housing at the bottom of the chain locker.

As a rule the anchor shall only be used in emergencies; therefore, all anchoring gear shall be securely stowed (but easily released) to prevent noise and inadvertent release while underway.

5.5 MASTS

A fabricated steel mast for radar and radio antennas, navigation lights, etc., shall be located on the pilot house overhead. The stern light shall be mounted aft between the inboard bulkheads at the 02 deck level on a closed shape support beam. An ensign staff with halyards and cleats shall be provided as directed by the owner. All masts shall be vibration free when underway and fitted with suitable foundations as required.

6.0 ACCOMMODATIONS AND FURNISHINGS

6.1 GENERAL

All furniture and furnishings must meet the structural fire protection requirements of 46 CFR Subpart 72.05.

6.2 PASSENGER AREAS

The Contractor is responsible for ensuring that the vessel is arranged and outfitted such that it complies with all applicable provisions of the Americans with Disabilities Act. Affected areas of the vessel may include, but are not limited to:

- Arrangement of passenger spaces, accessible washroom and other accessible areas.

- Location of internal and external rails, door handles, etc.
- Signs and markings in passenger areas.

Six metal trash bins with hinged top shall be supplied with appropriate tie downs: four on the main deck, two on the 01 deck and two on the 02 deck. The final location is to be at the direction of the Owner. Wheelchair tie downs shall be provided in a location determined by the Owner. All passenger benches to be EACCO Marine Seating, Inc., Metairie, LA, model EMS-AA18 (or equivalent). All furniture shall be securely attached with stainless steel bolts to lugs welded to the deck. Passenger seats in adjacent rows, when facing in the same direction, shall be arranged to ensure a minimum spacing of 30," measured between the fronts of the seats.

Four booths shall be installed on the 01 deck each constructed from two 42" EACCO benches and a Wilson and Hayes, Inc. Seattle, WA 24" x 42" aluminum mess tables with laminated top (or equivalent). The aftmost table on the starboard side shall have only one fixed seat and a wheelchair space on the aft side of the table. The Contractor shall order the tables and benches so that they are at a proper height and length for seating and a wheelchair.

Ventilated weathertight life vest lockers shall be procured or fabricated by the Contractor. Two lockers of box-type aluminum construction shall be fitted on the 02 deck. Four lockers of weathertight, aluminum construction shall be fitted on the main deck.

The cleaning gear lockers on the 01 deck each shall have the following fixtures and accessories, or Owner approved equal.

- Four galvanized steel shelves, approximately 15" x 30", supported on steel brackets.
- Mop and broom rack, approximately 12" x 24".

6.3 REST ROOMS

Spaces requiring sanitary fixtures, as indicated on the General Arrangement (Drawing 575-02-601), shall be fitted complete with toilets, washbasins, and accessories suitable for the spaces involved.

All plumbing fixtures and accessories shall be suitable for marine use. The fixtures and accessories shall be as manufactured by American Standard, Crane Company or equal. Fixtures shall be complete with supply stops, drain and hanger fittings.

Except as otherwise specified, all trim and accessories shall be chromium plated forged or cast brass. Traps for fixtures shall be adjustable, chrome plated, cast brass with clean-out plugs. All fixtures shall be fitted with traps, except those manufactured with internal traps.

The WC's shall be furnished as follows:

- One vitreous china toilet, complete
- One double-roll capacity, locking toilet paper holder
- One bulkhead-mounted, enamel vanity washbasin
- One chrome-plated, single-head faucet with hot and cold water lever handles
- One commercial quality liquid soap dispenser
- One commercial quality electric hot-air hand dryer
- One commercial quality KOALA (or equivalent) fold-down diaper change table
- One coat hook
- One good quality, polished metal mirror with chrome plated or anodized aluminum frame
- Chrome-plated or brushed aluminum grab rails

All outfit in the starboard side WC shall be suitable and installed so as to comply with the requirements of the Americans with Disabilities Act.

The Crew WC shall be furnished as follows.

- One vitreous china toilet, complete
- One double-roll capacity toilet paper holder
- One bulkhead-mounted, enamel vanity washbasin
- One chrome-plated, single-head faucet with hot and cold water lever handles
- One commercial quality liquid soap dispenser
- One towel rack
- One coat hook
- One good quality, polished metal mirror with chrome plated or anodized aluminum frame
- Chrome plated grab rails, as directed by the Owner

6.4 PILOT HOUSE WATER CLOSET (OPTION ITEM #2)

The pilot house WC shall be furnished as follows.

- One vitreous china toilet, complete
- One double-roll capacity toilet paper holder
- Two coat hooks
- One good quality, polished metal mirror with chrome plated or anodized aluminum frame
- Chrome plated grab rails, as directed by the Owner
- One towel rack
- One bulkhead-mounted, enamel vanity washbasin

- One chrome-plated, single-head faucet with hot and cold water lever handles
- One commercial quality liquid soap dispenser

6.5 PILOT HOUSE

The pilot house shall be arranged, outfitted and furnished generally in accordance with the pilot house Arrangement (Drawing 575-02-661). The final location of all pilot house equipment is to be at the direction of the Owner.

The pilot house is to be fitted with diffused dimmable lighting. Low level red lighting shall be supplied. The pilot house shall also be fitted with storm rails on the console, pilot house sides and overhead, at the direction of the Owner.

The Contractor shall design and install a control console at the forward end of the pilot house. The Contractor shall lay out and install the controls and other equipment so that they are conveniently visible to, or within reach of the operator. Final arrangement of the consoles and installed controls, etc., shall be to the approval of the Owner.

Consoles shall be of fabricated construction with matte black laminate finish. Hinged cabinet doors shall be installed in the console to enable convenient access to control wiring and furniture outfit shall be provided:

- Wilson & Hayes chart table Model T613-L with chart light (or equivalent)
- Wilson & Hayes book case Model C200 (or equivalent)
- Two heavy-duty, standard legal size, two-drawer filing cabinets with keyed lock. The filing cabinets shall be enameled sheet steel, mounted in a sub-base and shall be attached to the bulkhead.
- Two coat hooks shall be mounted on one of the stanchions in the pilot house.
- One steel or aluminum wastebasket shall be provided.

6.6 BRIDGE SEATING (OPTION ITEM #3)

- Two Stidd Model 500N (or equivalent)-1x2 track mounted chairs with footrests shall be fitted at the forward control console.

6.7 PILOT HOUSE OPTIONAL OUTFITTING (OPTION ITEM #4)

- Vanity with washbasin and one chrome-plated, single-head faucet with hot and cold water lever handles.
- One commercial quality liquid soap dispenser.
- One towel rack.
- One commercial quality single-pot coffee maker.
- One commercial quality microwave oven.
- One under-counter commercial quality refrigerator.

6.8 CREW MESS

- One fixed 36" square mess table with laminate top and edging, anodized aluminum fiddle with pipe support legs

- Four Wilson & Hayes steel side chairs, model S500 commercial quality chairs with backs and arm rests (or equivalent)
- One steel credenza to house commercial quality under-counter refrigerator and stainless steel sink. The bottom of unit shall be closed in with doors and also enclose a domestic hot water heater for the potable fresh water system.
- One commercial-quality microwave oven
- One commercial quality dual pot coffee maker
- One steel waste basket
- Eight 12" x 12" x 72" steel lockers c/w hat shelf and coat hangar bar. Lockers shall be attached to a sub base and bulkheads. Provision shall be made for locking with padlock.

6.9 ENGINE ROOM & AMR OUTFITTING

The Contractor shall design and install an acoustical machinery control booth in the engine room. It shall have a window facing aft and two side doors. The booth shall be ventilated. The booth shall be constructed of incombustible materials and the surfaces shall be impervious to oil mist and water vapor. The Contractor shall lay out and install controls and other equipment so that they are conveniently visible to and within reach of the operator. Final arrangement of the consoles and installed controls, etc., shall be to the approval of the Owner. The booth shall contain the following furnishings:

- One commercial quality chair of metal construction, fabric and foam of low flame spread with arm rests.
- One heavy-duty, standard legal size, two-drawer filing cabinet with keyed lock. The filing cabinet shall be enameled sheet steel, mounted in a sub-base and shall be attached to the bulkhead.

The engine room shall be outfitted with the following:

- The engine room cast iron service sink, 12" deep stain resisting, porcelain enameled inside only, roll rim with 12" high back and concealed hanger with single hose-end faucet.
- Two galvanized steel garbage cans with drop handles and lids.
- Water cooler

AMR1 shall be outfitted with the following:

- One heavy-duty steel construction workbench with steel-plate top, commercial supply or shipyard fabrication, 30"W x 48"L x 32"M with 16" x 8" x 18" lockable drawer and lower shelf.
- One industrial quality, closed 36" wide, five-shelf metallic unit shall be installed adjacent to workbench.

AMR2 shall have two off 12" x 21" x 72" steel lockers c/w hat shelf and coat hangar.

Lockers shall be attached to a sub base and bulkheads. Provision shall be made for locking with padlock.

6.10 ENGINE ROOM TOOLS (OPTION ITEM #5)

- One bench mounted heavy-duty 7" diameter electric grinder shall be mounted on the workbench.
- One heavy-duty, 3 way swivel bench vise, shall be mounted on the workbench. 4½" jaw width, 8" maximum opening.
- The Contractor shall allow for the purchase and installation of Owner-selected tools and tool chest, to a total purchase value of \$3500.

6.11 DECK EQUIPMENT

Chain guards shall be provided to secure the vehicle openings in the bulwarks, at the bow and stern of the vessel.

6.12 OWNER SELECTED DECK EQUIPMENT (OPTION ITEM #5)

The Contractor shall allow for the purchase and installation of Owner-selected deck equipment, including chains, chocks, shovels, pails, etc., to a total purchase value of \$2000.

7.0 INSULATION, LININGS AND CEILINGS

7.1 INSULATION, GENERAL

All insulation materials are to be incombustible, meeting USCG requirements. Thermal, acoustic and structural fire protection insulation installation is shown on Dwg. No. 575-02-635. Prior to the application of any insulation or linings, the surfaces to be covered shall be treated and coated as described in section 14.0. All exposed seams are to be neatly taped and finished.

7.2 STRUCTURAL FIRE PROTECTION INSULATION

Structural fire protection insulation shall be installed as shown on Dwg. No. 575-02-635 iaw with USCG requirements.

7.3 THERMAL INSULATION

All vertical interior surfaces of bulkheads exposed to the weather within accommodation or crew spaces, where not iwo structural fire protection locations, are to be thermally insulated with USCG approved foil faced 3" fiberglass blankets. All stiffeners, girders, frames, etc., are to be wrapped similarly with 1" blankets. Similarly all deck heads iwo passenger accommodations, not iwo of structural fire protection, and the under side of pilot house raised platform, are to be insulated with USCG approved foil faced 6" fiberglass blankets. The blankets shall not be compressed by the installation.

Piping insulation shall be provided for the engine and boiler exhaust pipes in the engine room. The insulation on the piping shall be of sufficient thickness to reduce the surface

temperature to 125 deg F. The exhaust piping in the ventilation trunk above the main deck shall be covered with sufficient insulation to reduce the surface temperature to 200 deg F. The expansion joints and flanges shall be covered with removable insulation blankets that are laced together with wire and hooks. Exhaust silencers shall also be covered with removable blankets. The insulation shall be MAS needled glass mat covered with MAS-PTFE cloth and shall not be painted. Anti-sweat insulation shall be placed on the sanitary and cold water piping in the engine room and in the overhead and within the joiner work of the passenger spaces. The insulation shall be K-Flex ECO and shall prevent condensation from forming on the cold water pipes. The hot water piping for the heating system in the under deck voids and within the passenger spaces shall be covered with thermal insulation. The thermal insulation shall be fiberglass with a suitable covering. The insulation shall be installed with a neat appearance. All pipe insulation shall meet the requirements of the USCG for combustibility.

Thermal insulation shall be required for the following ductwork only when:

- Supply ducts from the weather passing through heated spaces, and return air ducts passing through unheated spaces.
- Where ducting that is serving spaces and passes through a fire rated boundary, the ducts shall be insulated to conform to the maximum requirements of the bulkheads of the fire zone served. Where possible, the duct insulation shall be incorporated as part of the bulkhead or deck insulation.

Thermal insulation for ducts shall be 1". The "K" factor shall not exceed 0.28. Thinner insulation with the same insulation value may be substituted subject to the Owner's approval. For round ducts, thermal insulation shall be semi-rigid, preformed mineral wool of not less than 2 lb/ft³ density.

Weather supply ducts shall be properly vapor sealed.

Prior to installing insulation, the ducts shall be coated with primer. Insulation shall be applied with waterproof adhesive, secured with flat bands and corner clips spaced on not more than 18" centers. All thermal insulation shall be lagged with 10-oz. cotton with laps and joints sealed. Insulation subject to damage shall be covered with # 22 gauge sheet steel lagging.

7.4 ACOUSTIC INSULATION

Acoustic insulation with a lead septum is to be installed in combination with the structural fire protection iwo of the engine room overhead, engine room access, the engine room bulkheads, engine room intakes, engine room uptakes and under the pilot house deck.

7.5 LININGS AND CEILINGS

All exposed exterior insulated steel bulkheads and interior bulkheads within accommodation or crew spaces iwo of bulkhead vertical stiffeners shall be lined with USSG 18 GA painted sheet steel. All colors are to be at the direction of the Owner. Ducts, pipes, wireways, etc. shall be installed behind linings or boxed in with removable

panels for access as required. All windows and door openings shall also be boxed in with the same painted sheet steel. Sheet steel seams shall be covered so as to present a smooth, clean, waterproof and neat appearance. All fasteners are to be CRES.

Rest rooms are to be fitted with 304 CRES USSG 18 GA sheet linings on all vertical bulkhead surfaces 48" high up from the deck. Above 48" the lining shall be USSG 18 GA painted sheet steel. All seams are to be covered watertight to prevent seepage behind lining when washing down the spaces.

Deckheads are to be acoustic tile. Where access is required above the deckhead for operation of valves and where access is required for routine maintenance, easily removable panels shall be installed.

Smooth steel bulkheads in passageways may be painted to match adjacent areas.

8.0 DECK COVERINGS

All exterior decks and spaces accessible to either passengers or crew are to be painted with non-skid paint as specified in Section 14.0. All decks are to be thoroughly cleaned and prepared prior to painting. Colors shall be at the direction of the Owner.

A fabric reinforced electrical grade rubber floor mat, approximately 24" in width shall be provided in front of the main switchboard for its full width in the MCB. (OPTION ITEM #6)

The 01 deck interior passenger and crew area decking, except in way of stairs and washrooms shall be covered in Dex-O-Tex Decklite poured deck covering, meeting Class A-60 criteria, as shown on Dwg. No. 575-02-635. The poured deck insulation throughout the passenger and crew spaces shall be covered in a marine grade, USCG approved vinyl decking such as Lonseal resilient flooring. The Owner shall approve the floor covering color and texture.

Before laying any deck covering, the decks shall be thoroughly cleaned and be dry and free from all rust, grease, oil and other extraneous matter. The finished deck coverings shall be free from hollows and bumps, and shall present a level finish.

Where adjacent deck coverings are of different thickness, the thinner shall be gradually increased in thickness to finish flush with the thicker. Deck coverings shall not be laid until after all connection to deck for fastening machinery, equipment and furniture, etc., are installed.

All deck coverings shall be thoroughly cleaned after finishing and "sealed" as recommended by the deck manufacturer. Thereafter, the decking shall be thoroughly and completely covered in order to prevent any indication of wear prior to delivery of the ship.

Where deck drains are installed, all deck coverings shall be sloped to the drains.

All spaces laid with composite deck coating shall have an integral watertight cove base extending 4 inches up the bulkhead. Rubber or other glue on type cove is not acceptable.

Interior decks in washrooms shall be finished with Dex-O-Tex Terrazzo "M" epoxy resin composition deck covering system to Owner's selected color. The floor covering system shall consist of a ¼" minimum thickness underlayment, and a ¼" minimum thickness epoxy resin composition deck. The decking in way of the washroom doors shall be installed to a thickness necessary to bring the level of the washroom floor even with the passenger area flooring.

Cast aluminum safety stair treads shall be provided and installed on all external stairways, and on internal stairways accessible to passengers. The stair treads shall be of the highest quality, long wearing, anti-slip type and shall be made of corrosion-resistant aluminum alloy with non-skid granules imbedded into the walking surface. All stair treads shall have an anti-slip strip of contrasting color (bright yellow), 2" wide, parallel to and not more than 1" from the front nose of each tread. Stair treads shall be secured with flat head, stainless steel machine screws tapped into the stair.

Self-adhesive safety treads shall be provided at the head and foot of all stairways, inclined ladders, coamings, and in way of door coamings to ensure safe footing. Tactile warning areas at the head and foot of all stairways are to be installed in accordance with the ADA. Leveling compound is to be fitted in way of the elevator, ADA accessible exterior doors and ADA head doors as required, with a slope not exceeding 1:12. Decks shall be thoroughly cleaned and degreased prior to application.

Rubber mats shall be provided and installed in locations as follows.

- Pilot house: Inside both exterior doors
- Main deck and deck 02: Inside the exterior doors of the port and starboard stairways
- Engine room: At entrance foyer
- Machinery control booth: Dielectric rubber switchboard mat shall be provided, 900 mm wide (OPTION ITEM #6)

9.0 NAVIGATION EQUIPMENT

The following equipment is to be supplied and installed by the Contractor:

- MAESTRO analog anemometer (or equivalent) (black dial face)
- 6" shock mounted binnacle with quadrantal spheres, Ritchie model B-463 (or equivalent) with deviation card (24 VDC, 2 deg, with points of 5 deg card)
- Kahlenberg air horns model SHT-20 (120 VAC) with Model M-511 whistle control (or equivalent)
- Two Weems & Plath quartz clocks, model no. 290500 (or equivalent)
- Weems & Plath aneroid barometer, model no. 290700 (or equivalent)
- 12" diameter at the mouth ship's bell, polished bronze with lanyard
- Two searchlights, Carlisle & Finch 10" (or equivalent)

The final location of the above equipment shall be approved by the Owner. See section 42.0 for list of radios and electronics.

10.0 SAFETY EQUIPMENT

The Contractor shall supply and install all lifesaving equipment iaw the latest USCG requirements, including, but not limited to the following safety equipment list:

- Four (4) USCG approved labeled throwable 30" lifebuoys with retro-reflective tape. Two (2) of the buoys are to be provided with approved 100' lengths of buoyant lifeline and two (2) of the lifebuoys shall be fitted with a self-igniting lights. One each of a lifeline and lighted lifebuoys shall be mounted just aft of the bridge wings with a quick release mechanism, operable from the wings. The other lifeline equipped and light equipped lifebuoys shall be mounted on the main deck, forward and aft.
- 260 (250 adult passengers & 10 crew) USCG approved Type I adult inland style vinyl dipped labeled stackable PFD's with Type 1 retro-reflective material
- 50 USCG approved Type I child inland style vinyl dipped labeled stackable PFD's with Type 1 retro-reflective material (to be labeled and stored separately)
- Twelve (12) USCG approved hand held red distress signals and watertight container
- Four (4) fire axes to be stowed in quick release CRES brackets
- First Aid kit
- Portable fire extinguishers as required by the USCG
- Six (6) 50-man USCG approved IBA's
- A SOLAS approved 4.56 m rescue boat model BH-R4A and hydraulic single arm davit model SA14, Alexander & Ryan, Houston, TX (or equivalent) shall be supplied and installed on the stbd 01 deck aft. Any substituted rescue boat and davit selected must meet the requirements of 46 CFR 160.056 and 160.032, respectively, and acceptance of the boat and davit will be subject to approval by the OCMI.

The stowage location of the above equipment shall be approved by the Owner. PFD's shall be stored in securely fastened, ventilated, hinged covered labeled, painted aluminum deck lockers as shown on the general arrangements. All dated safety equipment such as distress signals and portable fire extinguishers shall be dated not more than one month before delivery of the ferry. Cleats shall be attached along the superstructure so that lines from the IBA's, when launched, can be secured to the ferry as needed.

Full instruction placards shall be provided and mounted by the Contractor for all safety equipment, pollution placards, etc.

11.0 NAMEPLATES, NOTICES AND MARKINGS**11.1 SHIP'S NAME**

The ferry's name and hailing port shall be placed on the transom below the main deck. The ferry's name also shall be placed at the bow, P/S, along the bulwark. Block letters, 12" high for the transom name, 8" high for the hailing port and 16" high forward P/S for the name, shall be used. All letters to be outlined in continuous weld bead. The ferry's official number and tonnage shall be permanently affixed with continuous weld bead on a main beam in the engine room iaw USCG Admeasurement requirements.

11.2 BUILDER'S NAMEPLATE

A brass or bronze nameplate with raised cast letters, not larger than 12" x 12" shall be provided and located as directed by the Owner. The nameplate shall give the following information: ferry's name, date of build, builder, hull number, Owner's name, address and Architect's name.

11.3 DRAFT MARKS

Draft marks shall be provided at frames 5 & 66, forward and aft, respectively. They shall be of Arabic numeral type, permanently attached to the hull with continuous weld bead. The numerals shall be 6" projected height, with the bottom of each numeral at an even foot dimension above the lowest point of the keel, from 6'-0" to 11'-0" above the keel.

11.4 MAIN DECK MARKINGS

Vehicle deck markings shall be applied as indicated by the Owner. Markings shall be painted in a contrasting color to that of the general deck area. Vehicle deck markings shall include, but shall not be limited to, vehicle lane indications, passenger walking areas and the designation of "No parking" areas in way of life raft mustering and emergency escapes from below the main deck.

11.5 NOTICE BOARDS AND FRAMES

Two cork bulkhead mounted public notice boards are to be supplied and located at the Owner's direction. A bulkhead mounted glass frame shall be supplied and mounted, as a minimum, for the following certificates and plans:

- COI
- Stability Letter
- FCC License
- Officer's Licenses
- Safety and Environmental Notices
- Fire Control & Safety Plan (Fire control plan shall be developed by the Architect with input from the Contractor as to the final arrangements and locations of firefighting equipment, etc.)

The frame location is to be at the direction of the Owner.

The following placards shall be provided and mounted at the direction of the Owner:

- Radiotelephone emergency broadcast procedures
- Pollution prevention
- Donning of life jackets (4)
- CO₂ instructions

11.6 SIGNAGE

Signage shall also be provided, as a minimum, for the following items:

- Ship's name and retroreflective tape on all lifesaving equipment
- Escape hatches and emergency exits

- Fuel shutoff valves
- ADA signage
- Fire protection equipment
- PFD lockers/locations
- Hearing Protection Required
- No standing in stairwells
- Potable Water

Such items shall be of high contrast and sized for the visually impaired, as required.

12.0 MISCELLANEOUS OUTFIT

The Contractor shall supply and install the following items:

- An American flag, 48" x 72"
- Four 100' 1.5" diameter twisted polypropylene mooring lines with a six foot tapered eye splice
- Two sets of keys and wrenches for all valves, deck plates, etc., as required, plus any equipment needed for specialized items, such as propeller nut wrench, tiller nut wrench and socket wrenches for each size grid cooler nuts.

13.0 ELEVATOR

13.1 GENERAL

A limited use/limited application (LU/LA) hole-less hydraulic direct coupled elevator is to be supplied and installed as shown on the drawings. The elevator is manufactured by Liftavator, Inc., 5299 Enterprise Drive, Lockport, NY 14094. An equivalent LU/LA may be used if approved by the Owner and it is designed, built and installed iaw the American Standard Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks, ANSI A17.1-2000 Part 5, Section 5.2, by ASME, hereinafter referred to as the "Code" and Recommended Minimum Passenger Elevator Requirements for the Handicapped. A preliminary LA/LU elevator drawing is included as Attachment B. An updated drawing must be obtained from the vendor.

Operation shall be key controlled with illuminated car and landing push buttons. The car station shall contain a keyed off/on switch, a light switch, a stop button, an alarm bell and a push button for each landing.

All elevator system components, including cab, actuators, rails, doors, controller, and hydraulic power pack, shall be supplied. The cab shall be fitted with a horizontal roller door. Swinging doors, complete with closers and all hardware, shall be supplied by the elevator manufacturer for installation at the landings. The elevator cab shall be fitted with an alarm button, annunciating to the elevator alarm system.

The elevator shall be designed to operate when the vessel is at a terminal, but shall be arranged such that use of the elevator is "locked out" when the vessel is underway. It shall be driven by an independent electro-hydraulic power pack, and have an emergency power source to lower the elevator to the lowest landing if normal power is lost. The

elevator shall be equipped with emergency lighting and an alarm button shall be fitted in the lobby.

Installation of the elevator shall be accomplished under the supervision of the manufacturer's technical representative.

13.2 ELEVATOR PERFORMANCE

The elevator shall have the following general characteristics:

- Designed and constructed for marine use in a salt air environment.
- LU/LA track shall be installed parallel to inboard bulkhead.
- Landings and Travel: Main deck, 01 deck and 02 deck, with travel of 9'-0" and 8'-6", respectively.
- Watertight pit below main deck iwo engine room.
- Capacity of 1000 pounds.
- Speed of 30 fpm.
- Passenger Type Hoistway Entrances (U.L. "B" Label 1-1/2 hour (450 deg F rating) fire rated doors and frames)
- The elevator cab shall have a maximum floor area of 18 ft².

13.3 DEVICES AND EQUIPMENT

The elevator shall be supplied with the following equipment:

- Automatic Leveling Device: Provide with leveling tolerance of 1/4" for travel either direction.
- The hydraulic drive unit shall be self-contained with 26 gallon steel reservoir; oil tank level; unitized approved standard elevator control valve with power-off manual lowering; three screw, pulsation free under oil commercial elevator pump with screened inlet; heavy duty 5 HP, 220V motor
- The cylinder shall be a direct coupled hole-less jack assembly built to ANSI A17.1 1993 rules 1302.IA, 1302.1 and 1302.34, incorporating the following: two internal bearings; a bronze head; bearing gland assembly with three pre-adjusted Chevron seals. The cylinder shall have a 3/4" thick, removable steel foot plate, an air bleed port at the top and an oil drain port above the gland assembly.
- The controller shall be a UL approved and labeled solid state programmable design, equipped with plug in type relays incorporating neon lights and test buttons. The design and operations to include a field adjustable up timer and non-interference timer.
- Car frame, platform, cab walls, cab dome, fixtures, handrails and gate are to be steel, with no combustible materials, whatsoever.
- Emergency light
- PA Speaker
- Elevator passenger alarm

14.0 PAINT & COATING SYSTEMS**14.1 GENERAL**

The ferry shall be painted to a high standard of finish as the ferry is in the public eye at all times and must present a professional and neat appearance to its customers. The paint and coating system must adequately protect the steel substrate.

All surface preparation and paint application shall be applied in strict accordance with the coating system manufacturer's recommendations. Coating application shall be performed under the supervision of an independent coating consultant. Paints are not to be thinned nor altered unless approved by the manufacturer.

No painting or coating shall be conducted under damp or unfavorable weather conditions. Where multiple coats of primer are applied, successive coats shall be tinted different colors. All fixtures, deck and bulkhead coverings, adjacent surfaces, equipment, signs, etc., shall be protected during painting. Any overspray shall be removed to the satisfaction of the Owner. All parts or spaces including piping, ducts, etc., not specifically mentioned or covered by these specs shall be painted to conform to the surrounding spaces. No primer or finish paint shall be applied to weld seams that must be tested for tightness until after the tests are complete. Paints applied to piping, machinery and other equipment that operate at temperatures greater than 120 deg F shall be an approved heat resistant type.

Any painted surfaces, including machinery and equipment, which become damaged prior to delivery shall be touched up to the satisfaction of the Owner. If the ferry should remain undelivered for 60 days after launching, the ferry shall be hauled and the underwater areas given one additional coat of A/F paint if inspection warrants it.

Fuel oil tanks and lubricating oil tanks shall be thoroughly cleaned of all rust, dirt, scale and other foreign matter to the Owner's complete satisfaction and coated with a non-volatile oil prior to taking oil aboard.

Temp-Coat 101 (or equivalent) coating, shall be applied to all non-insulated areas of steel work and piping in interior spaces which are exposed to heat or cold to prevent sweating. After application of the prime coat, the Temp-Coat 101 shall be prepared and applied in accordance with the manufacturer's recommendations. When the Temp-Coat 101 is properly cured, one finish coat shall be applied as specified in the painting schedule and in accordance with the Temp-Coat 101 manufacturer's recommendations.

14.2 SURFACE PREPARATION

A suitable pre-construction primer shall be applied to all steel prior to fabrication. Application of the product shall conform to manufacturer's recommendations as well as the following:

- Prepare to a minimum of SSPC-SP10 near white metal, a predominantly angular profile to 1 to 1.5 mils is required.
- Primer shall be applied using automatic spraying equipment to ensure correct and consistent film thickness.

- Primer shall not be used for touching-up damaged areas after fabrication.

Table 14.1 below includes definitions that shall apply for the surface preparation methods stated in the specification.

Table 14.1
Surface Preparation Definitions

| TITLE | SSPC ← | DEFINITION ↑ |
|---------------------------|--------|--|
| Solvent Cleaning | SP1 | Solvent cleaning is a method for removing all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants from steel surfaces. It is intended that solvent cleaning be used prior to the application of paint and in conjunction with surface preparation methods specified for the removal of rust, mill scale, or paint. |
| Hand Tool Cleaning | SP2 | Hand tool cleaning is a method of preparing steel surfaces by the use of non-power hand tools. Hand tool cleaning removes all loose mill scale, loose rust, loose paint, and other loose detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Mill scale, rust and paint are considered adherent if they cannot be removed by lifting with a dull putty knife. |
| Power Tool Cleaning | SP3 | Power tool cleaning is a method of preparing steel surfaces by the use of power assisted hand tools. Power tool cleaning removes all loose mill scale, loose rust, loose paint, and other loose detrimental foreign matter. It is not intended that adherent mill scale, rust and paint be removed by this process. Mill scale, rust and paint are considered adherent if they cannot be removed by lifting with a dull putty knife. |
| Commercial Blast Cleaning | SP6 | Commercial blast cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Staining shall be limited to no more than 33% of each square inch of surface area and may consist of light shadows, slight steaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Slight residues of rust and paint may also be left in the bottoms of pits if the original surface is pitted. |

All interior and exterior painted surfaces of the vessel shall be prepared and painted prior to delivery of the vessel to the Owner.

All fabricated edges shall be smooth both from a safety and a protective coating viewpoint. Fabricated edges include the following: shearing, flame cutting, sawing, drilling, and punching. It is the responsibility of the Contractor to do whatever is necessary to a sharp edge to ensure that adequate paint has been applied. Recommended procedures are:

- 1) Further grinding
- 2) Mist coating

3) Stripe paint with a brush

All welds on the exterior structure of the vessel shall be smooth (not flush). Deep pits or depressions shall be fixed using an approved weld repair procedure. High spots or peaks shall be ground or chipped sufficient to present a smooth profile. Weld scars, crevices, and pits shall be removed, in accordance with best marine practices and approved weld procedures.

14.3 PAINT SCHEDULE

Underwater Hull

| PREPARATION/ COATING TYPE | PRODUCT | No. of COATS | TOTAL DRY FILM THICKNESS | COLOR | COMMENT |
|---|--|-----------------|--------------------------------|------------|--|
| Commercial Blast Clean (SSPC-SP6) | -- | 100% | -- | -- | Blast clean as specified, all weldable primer to be removed. |
| Epoxy | Intergard FP | 1 | 5 mils | Black/Buff | |
| Epoxy | Intergard FA | 1 | 5 mils | Gray | |
| Anti-Fouling, Vinyl | Interviron BQA102, Ameron ABC or equal | 1 | 6 mils | Black | |
| Anti-Fouling, Vinyl | Interviron BQA- 103, Ameron ABC or equal | 1 | 6 mils | Red | |
| Draft Marks, Hull Markings | | | Brush application | White | |

Hull Above Waterline

| PREPARATION/ COATING TYPE | PRODUCT | No. of COATS | TOTAL DRY FILM THICKNESS | COLOR | COMMENT |
|---|--------------|-----------------|--------------------------------|-------|---|
| Commercial Blast Clean (SSPC-SP6) | | -- | | | Blast clean as specified, all weldable primer to be removed |
| Epoxy | Intergard FP | 1 | 5 mils | Gray | |
| Epoxy | Intergard KH | 1 | 5 mils | White | |
| Boot Stripe, Draft Marks, Load Line | | 2 | 5 mils | Black | |

Vehicle Deck

| PREPARATION/ COATING TYPE | PRODUCT | No. of COATS | TOTAL DRY FILM THICKNESS | COLOR | COMMENT |
|--------------------------------------|---------|-----------------|--------------------------------|-------|----------------------------------|
| Commercial Blast Clean (SSPC-SP6) | -- | -- | -- | -- | Deck surfaces must be kept clean |

| | | | | | |
|------------------|-----------------|---|-------------------------|------|----------------|
| Primer | Intershield 159 | 1 | 1.5 mils | | between coats. |
| Elastomer | Intershield 259 | 1 | 125 | | |
| Non-skid Coating | Intershield 556 | 1 | 30 -35 sq ft per gallon | Gray | |

Upper Exterior Decks

| PREPARATION/ COATING TYPE | PRODUCT | No. of COATS | TOTAL DRY FILM THICKNESS | COLOR | COMMENT |
|-----------------------------------|--|--------------|--------------------------|-------|---|
| Commercial Blast Clean (SSPC-SP6) | -- | -- | -- | -- | Deck surfaces must be kept clean between coats. |
| Zinc Rich Epoxy Primer | Interzinc 52, Dimetcote 302 or equal | 1 | 2-3 mils | Gray | |
| Epoxy | Tibbetts Non-Skid, Phillyclad 300 or equal | 1 | 5-7 mils | Gray | |

Exposed Superstructure

| PREPARATION/ COATING TYPE | PRODUCT | No. of COATS | TOTAL DRY FILM THICKNESS | COLOR | COMMENT |
|-----------------------------------|--------------------------------------|--------------|--------------------------|-------------------|--|
| Commercial Blast Clean (SSPC-SP6) | -- | -- | -- | -- | Special care to be taken to ensure all angles and crevices are treated. Ship's equipment shall be removed for painting as necessary to ensure 100% coverage. |
| Zinc rich Epoxy primer | Interzinc 52, Dimetcote 302 or equal | 1 | 2 mils | Gray | |
| Epoxy | Intergard FP | 1 | 5 mils | White | |
| Epoxy | Intergard FP | 1 | 5 mils | White | |
| High Gloss Urethane Finish | Interthane CC | 1 | 1.5-2 mils | White / Blue trim | Trim paint to be applied to Owner's direction. |

Masts

| PREPARATION/ COATING TYPE | PRODUCT | No. of COATS | TOTAL DRY FILM THICKNESS | COLOR | COMMENT |
|-----------------------------------|--------------------------------------|--------------|--------------------------|-------|--|
| Commercial Blast Clean (SSPC-SP6) | -- | -- | -- | -- | Special care to be taken to ensure all angles and crevices are treated. Ship's equipment shall be removed for painting as necessary to ensure 100% coverage. |
| Zinc rich Epoxy primer | Interzinc 52, Dimetcote 302 or equal | 1 | 2 mils | -- | |
| Epoxy | Intergard FP | 1 | 5 mils | White | |

| | | | | | |
|----------------------------|---------------|---|------------|-------|--|
| Epoxy | Intergard FP | 1 | 5 mils | Gray | |
| Epoxy | Intergard FP | 1 | 5 mils | Black | |
| High Gloss Urethane Finish | Interthane CC | 1 | 1.5-2 mils | Black | |

Surfaces Behind Linings & Fire & Thermal Insulation

| PREPARATION/ COATING TYPE | PRODUCT | No. of COATS | TOTAL DRY FILM THICKNESS | CO LO R | COMMENT |
|---------------------------|--------------------|--------------|--------------------------|---------|---------|
| Hand or Power Tool Clean | -- | -- | -- | | |
| Alkyd Based Primer | Interprime CPA-224 | 1 | 3 mils | Red | |

Interior Exposed Steel Above Vehicle Deck Level

| PREPARATION/ COATING TYPE | PRODUCT | No. of COATS | TOTAL DRY FILM THICKNESS | COLOR | COMMENT |
|-------------------------------|---------------------|--------------|--------------------------|-------|--|
| Hand or Power Tool Clean | -- | -- | -- | -- | Special care to be taken to ensure all angles, crevices, and paint “holiday” areas are coated. |
| Alkyd Based Primer | Interprime CPA-224 | 1 | 3 mils | Red | |
| Primer | Interprime CPA-226 | 1 | 3 mils | White | |
| Alkyd Enamel – Fire Retardant | Interlac HFB000 F/R | 1 | 2 mils | White | |

Engine Room – Bilge

| PREPARATION/ COATING TYPE | PRODUCT | No. of COATS | TOTAL DRY FILM THICKNESS | COLOR | COMMENT |
|---------------------------|--------------|--------------|--------------------------|-------|---------|
| Hand or Power Tool Clean | -- | -- | -- | -- | |
| Epoxy | Intergard FP | 1 | 5 mils | White | |
| Epoxy | Intergard FP | 1 | 5 mils | Gray | |

Engine Room – Above Bilge

| PREPARATION/ COATING TYPE | PRODUCT | No. of COATS | TOTAL DRY FILM THICKNESS | COLOR | COMMENT |
|---------------------------|--------------------|--------------|--------------------------|-------|--|
| Hand or Power Tool Clean | -- | -- | -- | -- | All nameplates, signs, valve handles, controllers, etc., |
| Alkyd Based Primer | Interprime CPA-224 | 1 | 3 mils | Red | |
| Primer | Interprime CPA-226 | 1 | 3 mils | White | |

| | | | | | |
|-------------------------------|---------------------|---|--------|-------|--|
| Alkyd Enamel – Fire Retardant | Interlac HFB000 F/R | 1 | 2 mils | White | shall be carefully masked prior to painting. |
|-------------------------------|---------------------|---|--------|-------|--|

Bow Thruster Compartment, Steering Compartment, Hull Void Spaces

| PREPARATION/ COATING TYPE | PRODUCT | No. of COATS | TOTAL DRY FILM THICKNESS | COLOR | COMMENT |
|---------------------------|--------------|--------------|--------------------------|-------|---------|
| Hand or Power Tool Clean | -- | -- | -- | -- | |
| Epoxy | Intergard FP | 1 | 5 mils | White | |
| Epoxy | Intergard FP | 1 | 5 mils | Gray | |

Deck Lockers, Elevator Shaft, Emergency Generator Compartment

| PREPARATION/ COATING TYPE | PRODUCT | No. of COATS | TOTAL DRY FILM THICKNESS | COLOR | COMMENT |
|---------------------------|--------------|--------------|--------------------------|-------|---------|
| Hand or Power Tool Clean | -- | -- | -- | -- | |
| Epoxy | Intergard FP | 1 | 5 mils | White | |
| Epoxy | Intergard FP | 1 | 5 mils | Gray | |

Fresh Water Tank

| PREPARATION/ COATING TYPE | PRODUCT | No. of COATS | TOTAL DRY FILM THICKNESS | COLOR | COMMENT |
|---------------------------|---------------|--------------|--------------------------|-------|---------|
| Hand or Power Tool Clean | -- | -- | -- | -- | |
| Epoxy | Interline 925 | 1 | 8 mils | Cream | |
| Epoxy | Interline 925 | 1 | 8 mils | White | |

Chain Locker

| PREPARATION/ COATING TYPE | PRODUCT | No. of COATS | TOTAL DRY FILM THICKNESS | COLOR | COMMENT |
|---------------------------|--------------|--------------|--------------------------|-------|---------|
| Hand or Power Tool Clean | -- | -- | -- | -- | |
| Epoxy | Intergard FP | 1 | 5 mils | White | |
| Epoxy | Intergard FP | 1 | 5 mils | Gray | |
| Epoxy | Intergard FP | 1 | 5 mils | Black | |

14.4 PAINT THICKNESS TESTS

Dry film thickness readings are to be taken after the application of each main paint coat. Any extra coats required to meet the recommended thicknesses are to be applied prior to the application of the next coat.

14.5 CATHODIC PROTECTION

A system of cathodic anodes, manufactured iaw MIL-A-18001, shall be installed iaw the following schedule:

- sea chests
- rudders
- grid coolers
- hull

The anodes shall be attached to the hull with 316 CRES studs, lock washers and nuts.

The anodes shall be fitted below the light waterline, in way of the region of the propellers, mid-body and at the ends. The exact location of the anodes shall be finalized by the Owner during construction.

Supplemental 12 pound zincs mounted on each side of the keel and electrically isolated from the hull shall be electrically connected to all the keel coolers on that side of the ferry with 0 AWG wire suitable supported to prevent movement and damage from debris. No paint is to be applied to the zincs nor left thereon. Unless no significant welding is performed after launch, suitable temporary cathodic protection is to be provided during the period afloat prior to trials, with the final zincs fitted subsequent to completion of all significant welding. A bonding jumper cable or shaft brush shall be installed on each shaft line and rudder post to ensure electrical bonding.

The Contractor will ensure that the positioning of anodes does not interfere with blocks used in future docking of the vessel. The position of anodes will be noted on the "as-built" docking plan.

15.0 PROPULSION**15.1 PROPULSION – GENERAL**

The vessel shall be propelled by two high-speed diesel engines, independently driving two fixed-pitch propellers through reduction gears. The main diesel engines and gearboxes shall be located in the engine room, in the midsection of the vessel. Propulsion machinery shall be arranged as shown on the Machinery Arrangement (Drawing 575-02-201).

The vessel shall be arranged for operation with a manned machinery space, and shall comply with all associated requirements of the regulatory bodies.

15.2 MACHINERY CONTROL BOOTH (OPTION ITEM #6)

A MCB shall be installed in the engine room, as shown on the General Arrangement (Drawing 575-02-601) and the Machinery Arrangement (Drawing 575-02-201). The

MCB shall be arranged so that the main engines, ship's service diesel generators, bow thruster engine, and other items of main and auxiliary machinery can be observed, controlled, and monitored by an operator seated therein while the vessel is underway.

The MCB shall be an independent structure. It shall be mounted on vibration-absorbing mounts to minimize the exposure of the cab, its equipment, furnishings, and occupant to structure-borne noise and vibration.

15.3 MAIN PROPULSION ENGINES

The vessel shall be propelled by two identical, high-speed diesel engines, Caterpillar Model 3508C (or equivalent). The engines shall produce 775 BHP at 1200 RPM at the manufacturer's defined "A" continuous rating for vessels operating at rated load and rated speed up to 100% of the time, without interruption or load cycling (80% to 100% load factor). Typical operation ranges from 5000 to 8000 hours per year. All main propulsion auxiliaries shall be sized for the maximum continuous rating of the engines. The propulsion engines shall be designed to burn #2 Diesel fuel meeting ASTM D975. The output shafts of both engines shall rotate in the same direction. The engine exhaust characteristics will meet the requirements of the US EPA Tier II requirements for Category 2 marine engines.

Each main propulsion engine shall be of four-stroke, eight-cylinder, vee non-reversing high-speed design. Each main propulsion engine shall be complete with electronic injection, turbocharger, and separate circuit aftercooler. Each main engine shall be supplied with a control system, air-start system, exhaust system, flywheel, keel-cooling water system (including cooling water supply to the reduction gears), fuel system, instrumentation (local and remote), lube oil system, mounting system, and electronic protection system. Each main engine shall be equipped with integral fuel pumps, lubricating oil circulating pumps, and similar accessories. The engines shall be mounted on "Chockfast Orange" poured solid mounts.

Each main engine shall be supplied with a local engine control panel, including local start and stop pushbuttons and emergency stop. Main engines shall be supplied with start and control panels, throttle interfaces, start buttons, emergency stop buttons, control transfer buttons, shaft tachometers, main engine RPM indicators, and engine monitoring gages, to be installed in the MCB and the Pilot House.

15.4 REDUCTION GEARS

Two reduction gearboxes shall be fitted with Twin Disc Model MG 540, 2.58:1 (or equivalent). Each gearbox shall be driven by a single main propulsion engine and connected to a single output shaft. The gearboxes shall be reversible, and shall be rated for continuous operation at the rated power of the main engines in both directions of rotation. For normal ahead operation, the gearboxes shall be arranged to turn the propellers in an outboard direction (i.e. port shaft turns counterclockwise and starboard shaft turns clockwise when viewed from astern).

Each gearbox shall have an integral main shaft thrust bearing and hydraulic ahead/astern clutches. Each gearbox shall be furnished with an internal torsional coupling and a SAE

bell housing adapter for direct mounting to the flywheel housing of the main engine. The gearboxes shall be complete with an integral lube oil system and oil cooler.

Gearboxes shall have a vertical offset as indicated on the Shafting Arrangement (Drawing 575-02-243). The reduction ratio of the gearboxes shall be selected to produce a nominal output shaft speed of 478 RPM when the main propulsion engine operates at 100% of rated speed. The reduction ratio shall be the same in both directions of rotation.

The gear box shall be electronically controlled so as to interface with the ZF Mathers controls (or equivalent) without the need for extra servos. The gear box oil temperature sensor and any other supplied alarms shall be interfaced with the main engine monitoring and alarm screen.

15.5 SHAFTING

Two complete, identical, outboard-turning shafting systems shall be provided, port and starboard, each generally as shown on the Shafting Arrangement (Drawing 575-02-243). The shafting systems shall meet the requirements of the applicable regulatory bodies. ABS certification shall be provided for the shafting material. The shafting shall be installed to the satisfaction of representatives of the engine manufacturer and the Owner. A torsional vibration analysis shall be performed by the Contractor. The shafting systems are to be free from harmful torsional vibrations.

The shafting arrangement shall allow for the removal of the tail shafts outboard with the vessel in dry-dock, without removing the rudders.

15.6 SHAFT BRAKES

Each shaft line shall be fitted with a disk type, pneumatic actuated, twin caliper shaft brake. The brake shall be capable of stopping rotation of the output shaft in 3 to 4 seconds, from an initial shaft speed of 478 RPM. The calipers shall be self-adjusting and spring retracting. The complete brake assembly, including disc, caliper holders, calipers, flanges, and control kit, shall be provided by a single manufacturer.

A spacer of ABS Grade 2 steel shall be fitted between the gearbox output coupling and the disc-type shaft brake of each shaft line, as shown on the Shafting Arrangement (Drawing 575-02-243).

15.7 PROPELLERS

Two complete propellers shall be fitted. The propellers shall be fixed pitch, cast of nickel aluminum bronze ABS Type 4. The propellers shall be joined to the tail shaft by a tapered, keyed connection with jam nut. The propellers shall be identical, except that one propeller shall be left hand and the other shall be right hand. Propellers to have anti-singing trailing edges. The propellers shall be designed, constructed, and tested in accordance with ABS requirements, and shall be statically balanced.

15.8 ENGINE CONTROLS

A centralized control console for the ship's machinery shall be provided in the MCB, with additional control consoles in the Pilot House.

The centralized control console in the MCB shall provide the watch engineer with devices for remote actuation of the selected and specific components in a logical and convenient arrangement. The engineers' control console shall provide effective one-man control and monitoring of the main engines, bow thruster engine, generators, fire pump and other normal watch functions. All equipment controlled by the central control system shall be capable of immediate local operation in case of control system failure and all components of the control system shall be designed on the "fail safe" principle with respect to the system function.

Controls on centralized MCB console shall include main engine control head with levers, main engine gages and alarms, main engine remote start and stop, shaft tachometers, reduction gear position indicators, bow thruster control head with lever, bow thruster engine gages and alarms, bow thruster engine remote start and stop, generator gages and alarms, generator remote stop, alarm test buttons, and fire pump remote start and stop.

Controls for the ship's machinery shall be installed in the pilot house. Controls in the pilot house shall include main engine control head with levers, main engine RPM gages, shaft tachometers, reduction gear position indicators, bow thruster control head with lever, and general failure alarm. The controls in the pilot house shall also include main engine gages and alarm panels, main engine remote start, stop and emergency stop, generator remote emergency stop, bow thruster engine remote start, stop and emergency stop, fire pump remote start and stop, and fire sprinkler pump remote start and stop.

The contractor shall be responsible for furnishing the FMEA to the USCG MSC for all propulsion control systems.

15.9 MAIN PROPULSION ENGINE CONTROL SYSTEM

Electronic controls for the main propulsion engine speed and direction, with electronic shift, shall be installed in the MCB and in the pilot house. The main propulsion engine controls shall be ZF Mathers Microcommander (or equivalent). One set of pilot house controls shall be fitted at the forward operating console, with the second set fitted in the MCB. Each system shall have a control head with levers to control the main engines, and station transfer buttons to switch control from one station to another.

The propulsion controls will be interfaced with the shaft brakes to ensure that the brakes are off when the transmission is engaged.

15.10 BOW THRUSTER CONTROL SYSTEM (OPTION ITEM #8)

Electronic controls for the bow thruster and its associated engine shall be installed in MCB and at the control position in the pilot house. Bow thruster controls shall be provided by the bow thruster manufacturer.

16.0 EXHAUST SYSTEM

16.1 GENERAL

The exhaust gases from the propulsion engines shall be led independently to atmosphere. Exhaust duct arrangement and materials shall generally be as shown on the Machinery Exhaust System Diagram (Drawing 575-02-259). The exhaust ducts shall be routed as

directly as possible, while allowing adequate clearance for normal maintenance and repair of the propulsion engines. The Contractor shall install pipe hangers, anchors, and sway braces as necessary to provide adequate support for the exhaust ducts while minimizing noise and heat transfer to the ships structure. Expansion joints shall be provided at the exhaust outlet from each engine, and as required to minimize thermal expansion stresses on the engine exhaust flange and the supports for the exhaust ducts.

Exhaust ducts shall be covered with thermal insulation meeting regulatory requirements, to the satisfaction of the Owner.

Provisions shall be made for drainage of the uptakes, through a water trap, with a loop seal and drain to bilge.

The builder will ensure that total backpressure on any of the engines shall be less than 50% of that allowable by the engine manufacturer at rated speed and load.

16.2 MAIN PROPULSION ENGINE SILENCERS

Each main propulsion engine exhaust system shall be fitted with an exhaust silencer. The silencer shall be an absorption type, multi-chamber, vertical, welded steel vessel, with spark arrestor and trap, drain, support brackets and flanged end connections. The silencer shall have a minimum sound attenuation of 35 dB.

The main engine silencers shall be mounted within the ship's exhaust casings, using appropriate thermal and acoustic isolators.

16.3 GENERATOR SET ENGINE SILENCER

Each ship's service generator prime mover shall be fitted with an exhaust silencer. Each silencer shall be an absorption-type, multi-chamber, vertical, welded steel vessel, with spark arrestor and trap, drain, support brackets and flanged end connections. The silencer shall have a minimum sound attenuation of 35 dB.

16.4 EMERGENCY GENERATOR ENGINE SILENCER

The emergency generator prime mover shall be fitted with a horizontal welded steel silencer, with spark arrestor and flanged end connections.

16.5 BOW THRUSTER ENGINE SILENCER (OPTION ITEM #8)

The bow thruster engine exhaust system shall be fitted with an exhaust silencer. The silencer shall be an absorption type, multi-chamber, vertical, welded steel vessel, with spark arrestor and trap, drain, support brackets and flanged end connections. The silencer shall have a minimum sound attenuation of 35 dB.

The bow thruster engine silencer shall be mounted within the ship's exhaust casings, using appropriate thermal and acoustic isolators.

17.0 FUEL OIL SYSTEM

A complete No. 2 diesel fuel oil system shall be provided and installed, in accordance with the Fuel Oil System Diagram (Drawing 575-02-261). The complete fuel oil system

shall meet the applicable requirements of the US Coast Guard and the American Bureau of Shipping for materials, equipment and remote operation of valves.

The vessel's main propulsion engines, ship's service generator prime movers, bow thruster engine, and domestic heating boiler shall be supplied from a single fuel oil storage tank, of 6000 gallon capacity, located in AMR1. Fuel supply lines for the engines and boiler shall be taken independently from a single fuel manifold located in the engine room.

A 2" duplex strainer shall be located between the storage tank and the fuel manifold. The duplex filter shall be of cast steel or ductile iron construction, with stainless steel baskets and wire cloth liners. Racor triplex coalescing fuel filters (or equivalent) shall be installed in the fuel supply line for each main engine. A Racor duplex coalescing filter (or equivalent) shall be installed in the fuel line for the bow thruster engine, ship's service generators and emergency generator prime mover.

Fuel lines shall be run below the floor plates except at the filters and equipment locations. Care shall be taken to avoid trapped air in high spots. Vent valves or cocks shall be provided if not built into the filters.

The fuel tank shall be fitted with King Gage pneumatic (or equivalent) level gage. The level display shall be located in the MCB.. High/low level alarms for the diesel oil storage tank shall be provided in the machinery control enclosure and pilot house via separate high and low level switches.

Filling and transfer connections for diesel oil shall be provided on the main deck. Location and connection details shall be approved by the Owner. Valves in the fuel oil filling system shall be manually operated, except where required otherwise by the regulatory bodies.

A rotary hand transfer pump shall be fitted to permit the transfer of fuel to the emergency generator fuel tank.

A pneumatically operated quick closing valve shall be placed in the fuel oil tank outlet before the duplex strainer. The valve shall be capable of being closed locally with a manual hand wheel or remotely through a compressed air signal. The remote actuation of the valve shall be from an emergency control station located in the pilot house.

The emergency generator shall draw fuel from one independent diesel oil service tank located in the emergency generator room. This independent tank shall have a minimum capacity sufficient for four hours of continuous operation at the maximum rated power of the emergency generator. A pneumatic pump fitted in a branch line from the diesel fuel manifold shall be used to fill the emergency generator diesel oil service tank. The overflow from the emergency generator fuel tank shall drain to the diesel oil storage tank. An overflow sight glass shall indicate when the emergency diesel fuel tank is full.

Each strainer or filter in the fuel system shall be fitted with sufficient valving to permit changing a filter or strainer in service.

Flexible fuel hoses, where used, shall be limited to 30" in length and be of USCG

approved construction.

18.0 SHIP'S SERVICE PIPING SYSTEM

18.1 GENERAL

The fabrication and installation of all ship's service piping systems shall be in accordance with all applicable US Coast Guard regulations. Pipe runs shall be installed, supported, and shielded against mechanical damage, in accordance with best shipyard practices. All valves, cocks and connections shall be readily accessible for maintenance and operation. Where necessary for proper operation or for the protection of personnel, insulation shall be applied to pipes in accordance with ASTM standards for shipyard piping insulation. Where piping must be removed for proper maintenance or removal of equipment, the piping shall be arranged for easy removal.

Pipes, valves, and fittings shall generally be of the materials and grades listed in reference m of section 1.5. All ship's piping subject to corrosion or in seawater service shall be of XS wall thickness, or greater.

Tank fill and discharge connections on the main deck shall be located and distinctly marked to prevent mis-filling.

Piping shall be painted and marked with color coded markings denoting the service and fluid. Valve hand wheels shall have embossed or engraved tags denoting service.

19.0 VENTS, SOUNDINGS, AND LEVEL INDICATORS

19.1 GENERAL

All tanks shall be fitted with effective vents, as shown on the Vents and Soundings System Diagram (Drawing 575-02-506). Tank vents shall comply with all applicable CFR 46 subchapter H. Vents terminating below the main deck shall be fitted with gooseneck vent terminals. Vents terminating above the main deck shall be fitted with ball-check terminals and screens. Vents shall generally be located so that they do not obstruct access to machinery or interfere with vehicle, passenger, or crew movements. Vents entering the weather at the main deck level shall be positioned as close to the bulwarks as practicable.

All compartments below the main deck not provided with mechanical ventilation supply or exhaust shall be fitted with effective vents terminating above the main deck. A minimum of two vents shall serve each compartment, with one vent located to each side of the vessel. Vent terminals shall have effective watertight closures.

Each tank shall be fitted with an effective means of determining the level of fluid therein, in compliance with all applicable regulations of the regulatory bodies. Level indicators shall generally be as shown on the Vents and Fills System Diagram (Drawing 575-02-506). Refer also to the individual system diagrams and to the sections following.

20.0 DOMESTIC SPACE HEATING SYSTEM**20.1 GENERAL**

The vessel shall be fitted with a domestic heating system as shown on the Domestic Heating System Diagram (Drawing 575-02-511). The system shall maintain an interior temperature of at least 72°F throughout the passenger lounge, crew mess, toilets, and pilot house at an outdoor ambient temperature of 10°F or above. The system shall maintain an interior temperature of at least 50°F at an outdoor ambient temperatures between 10°F and -20°F.

Heating of the passenger lounges, crew mess, toilets, and pilot house shall be by a hot water circulation system. Four separate heating circuits shall be provided as follows:

- Deck 01 baseboard heaters (port passenger lounge, crew mess, washrooms)
- Deck 01 baseboard heaters (starboard passenger lounge, washroom)
- Deck 01 makeup air heaters.
- Pilot house
- Engine room and below main deck.

Hot water shall be provided to the domestic heating system by a dedicated hot water boiler. Each heating circuit shall be supplied by a dedicated zone pump. Each pump shall be activated by a thermostat control located within the space served.

Air handlers with hot water heating coils shall be fitted within the accommodation space ventilation makeup/supply air inlets to temper supply air. Forced-air unit heaters with hot water heating elements shall be installed in the engine room and AMR's. Thermostat-controlled, forced-air electric heaters shall be installed in the pilot house, steering gear compartment, and bow thruster compartment.

The heating system shall be filled with a propylene glycol solution capable of preventing freezing down to -10 F.

20.2 HEATING ELEMENTS, WATER BASEBOARD

Commercial-quality, hot water baseboard radiant heater elements shall be installed in the passenger lounges, crew mess, toilets, and pilot house, generally as shown on the Domestic Heating System Diagram (Drawing 575-02-511).

The heating elements shall be of the fin-tube type, with copper/aluminum or steel fins. A one-piece expanded metal cover with electro-galvanized finish shall be installed over each heating element. Each heating element shall be fitted with isolation gate valves.

Baseboard heating elements in the toilet spaces shall have a heating capacity of at least 1750 BTU/hr. All other baseboard heating elements shall have a heating capacity of at least 3500 BTU/hr.

The heating elements shall be bulkhead mounted near deck level. The heating elements

shall be installed with a minimum clearance of 6 inches between the finished surface of the deck and the lowest surface of the elements or guards. Where necessary, due to obstructions in the spaces, multipass convectors may be used provided the same heat capacity is retained.

The baseboard heating elements on the 01 level shall be consist of two separate hot-water circuits as shown in the Domestic Heating System Diagram (Drawing 575-02-511). Hot water flow in each circuit shall be controlled by a thermostats located in their respective spaces. The thermostat for the port passenger space shall be located in the crew mess. The thermostat for the starboard passenger space shall be tamper resistant. All baseboard heating elements on the Deck 03 level shall be installed on a common hot-water circuit. Hot-water flow in the circuit shall be controlled by a thermostat located in the pilot house.

20.3 HEATING ELEMENTS, SUPPLY AIR

The vessel shall be fitted with two identical air handlers with fin-coil type hot water convection heating elements, to be installed in the accommodation space supply air intakes to port and starboard.

The heating elements shall be of the fin-coil type, with copper/aluminum or steel fins. Each heating element shall be fitted with isolation gate valves. The air handlers will be constructed of galvanized sheet steel and contain insulation for thermal and noise attenuation.

Supply air heating elements shall have a convective heating capacity of at least 60,000 BTU/hr.

Supply air heating elements shall be installed in accordance with the manufacturer's recommendations.

The supply air heating elements shall be installed on a common hot-water circuit as shown in the Domestic Heating System Diagram (Drawing 575-02-511). Hot-water flow shall be continuous when the dedicated zone pump is operating.

20.4 HEATING ELEMENTS, FORCED-AIR HOT WATER

Four commercial-quality, fin-type, hot water unit heaters with integral electric circulation fans shall be installed as follows:

- Engine room – two heaters, positioned in opposite corners of the space
- AMR1 – one heater
- AMR2 – one heater

Hot-water unit heaters shall have copper heating elements and aluminum or copper/aluminum fins, enclosed within a steel casing. Fans shall be powered by permanently lubricated, TEFC, single-speed motors. Unit heaters shall be fitted with adjustable outlet louvers. All hot-water unit heaters shall be USCG and ABS approved.

Hot water unit heaters shall have a heating capacity of at least 45,000 BTU/hr.

Unit heaters shall be suitable for bulkhead or deckhead installation. They shall be supplied with all mounting hardware, and shall be installed in accordance with the manufacturer's recommendations.

The forced-air hot water heaters shall be installed on a common hot-water circuit as shown in the Domestic Heating System Diagram (Drawing 575-02-511). Hot-water flow shall be controlled by a thermostat located in the engine room.

20.5 HEATING ELEMENTS, ELECTRIC

Three commercial-quality, electric heaters with electric circulation fans shall be installed as follows:

- Bow thruster compartment – one unit heater, minimum 5.0 kW
- Steering gear compartment – one unit heater, minimum 5.0 kW
- Pilot house – one duct heater with blower, minimum 2.0 kW

Electric unit heaters shall have enclosed copper heating elements and aluminum/steel heat exchanger cores, enclosed within a galvanized or stainless steel cabinet. Fans shall be powered by permanently lubricated, TEFC, single-speed motors. Unit Heaters shall be fitted with adjustable outlet louvers. All electric unit heaters shall meet USCG and ABS requirements.

The unit heaters below main deck shall be suitable for bulkhead or deckhead installation. They shall be supplied with all mounting hardware, and shall be installed and wired in accordance with the manufacturer's recommendations.

The electric heater in the pilot house shall be a electric duct heater with fan unit. It shall be furnished with suitable dampers and ducting to provide heated outside air or recirculated air. The outlet of the heater unit shall be directed to volume control dampers that may be used to direct hot air over the windows.

Electric heaters shall be controlled by a thermostatic switch mounted on the heater.

21.0 MACHINERY AND EQUIPMENT SPACES VENTILATION SYSTEM

21.1 GENERAL

Mechanical ventilation systems shall be provided for machinery and equipment spaces, as indicated on the Machinery Space Ventilation System Diagram (Drawing 575-02-510). The systems shall consist of motor driven supply and exhaust fans with suitable ventilation inlets and outlets and all necessary duct work including volume dampers, fire dampers, protection screens, diffusers, terminals, etc.

21.2 ENGINE ROOM

The engine room shall be supplied with cooling and combustion air by dedicated supply fans. Air shall be supplied to the direct vicinity of the main propulsion engines, bow thruster engine, ship's service generator prime movers, hot water boiler and MCB by a system of fixed ductwork. The engine room shall be exhausted naturally through the

exhaust uptake casings, to port and starboard.

Engine room air supply shall be by two identical, 24" vaneaxial, two-speed, 1800/900 rpm electric-motor driven fans suitable for inline duct installation. Each fan shall have a nominal rated capacity of 9000 CFM at a static head of 1.0" WG when operating at full speed. Full-speed and half-speed operation shall be possible. One fan shall be installed in the port intake duct, and the second shall be installed in the starboard duct. Pneumatic and thermostatic release automatic fire dampers shall be fitted in the supply air ducting, on the discharge side of each supply fan. The engine room supply fans shall draw air through louvered intakes on the outboard bulkheads of the deckhouse support structure, above the 01 deck. Engine room exhaust air louvers shall be located on the aft face of the exhaust casings, at or above the 02 Deck level. The exhaust outlet ducts shall be fitted with pneumatic and thermostatic release automatic fire dampers per US Coast Guard regulations. The Contractor shall ensure that the engine room ventilation arrangement does not produce excessive pressurization of the space in normal operating conditions.

Sufficient engine room intake air shall be ducted to the machinery control enclosure for proper cooling of the main switchboard.

The pneumatic release for the fire dampers and shut down of the fans shall be interfaced with the CO2 system and the emergency station in the pilot house.

The fans shall be constructed of corrosion resistant materials and coated to prevent deterioration in the marine environment. The fan motors shall be TEFC construction and have a service factor of 1.15.

The fire dampers shall be USCG approved.

Moisture separators shall be fitted to the inlet air louvers.

The free opening of the inlet and outlet shall be at least the area necessary to keep the air velocity less than 2000 feet per minute.

Ducting within the machinery space shall be constructed of 18 gage galvanized rectangular or round tube. Joints shall be mechanically fastened with rivets, screws or purpose built clamps.

Duct terminations shall be fitted with manually operated air volume dampers.

21.3 AUXILIARY MACHINERY AND EQUIPMENT SPACES

The AMR1 shall be ventilated by mechanical supply and natural exhaust. One 12" vaneaxial, single-speed, TEFC electric-motor driven fan shall be fitted to supply the AMR1, together with associated ductwork, diffusers, etc., as shown on the Machinery Space Ventilation System Diagram (Drawing 575-02-510). The supply fan shall have a rated capacity of 1200 CFM at a static head of 0.5" WG. An exhaust duct shall be fitted on the opposite side of the space from the supply duct. Supply intake and exhaust outlet shall be rectangular openings in the superstructure as shown on the general arrangement. The intake opening shall be fitted with a moisture separator and hardware cloth trash screen. The outlet opening shall be fitted with a louver and a hardware cloth trash screen.

The AMR2 shall be ventilated by natural supply and mechanical exhaust. One 12" vaneaxial, single-speed, TEFC electric-motor driven exhaust fan shall be fitted to exhaust the space, together with associated ductwork, diffusers, etc., as shown on the Machinery Space Ventilation System Diagram. The exhaust fan shall have a rated capacity of 1200 CFM at a static head of 0.5" WG. A supply duct shall be fitted on the opposite side of the space from the exhaust duct. Supply intake and exhaust outlet shall be rectangular openings in the superstructure as shown on the general arrangement. The intake opening shall be fitted with a moisture separator and hardware cloth trash screen. The outlet opening shall be fitted with a louver and a hardware cloth trash screen.

The bow thruster compartment, voids, chain locker and steering gear compartment shall be ventilated by natural supply and natural exhaust, with screened gooseneck terminals with hinged watertight closures, located above the main deck.

Plate type manual fire dampers shall be provided in the ventilation trunks of the AMR's. The fire dampers shall be operable from the main deck. The fire dampers shall have open/closed indications.

21.4 EMERGENCY GENERATOR COMPARTMENT

The emergency generator compartment shall be ventilated by combined mechanical and natural supply and mechanical exhaust. Intake louvers shall be fitted on the fwd bulkhead. Exhaust louvers shall be fitted on the outboard bulkhead of the compartment. The louvers shall be motor operated such that they open automatically when the generator is in operation. The louvers shall be fitted with springs or counterweights, to maintain them in a closed position when the generator is not running. Supply air for combustion and cooling shall be drawn into the space by the generator's radiator fan, and naturally exhausted. A 12" round mushroom type vent shall be provided to naturally ventilate the EDG space. The mushroom vent shall be fitted with a manual fire damper operable from the 02 level. The vent will also have a trash screen. A 1-foot square vent opening shall be located on the inboard bulkhead of the EDG compartment to provide inlet air for the natural exhaust. The vent opening will have a trash screen and a hinged closure. The vent opening shall be located sufficiently high above the 02 deck to prevent any egress of water that may accumulate during inclement weather.

21.5 BATTERY LOCKER

The battery locker, behind the pilot house on the 02 deck, shall be naturally ventilated in accordance with ABS and US Coast Guard requirements. A 12" round mushroom type vent exhaust duct located at the top of the locker will duct exhaust air terminating at the top of the wheel house. A vent opening with closure located at the base of the locker will provide the supply air. The termination on top of the pilot house and the inlet opening shall have a trash screen.

21.6 MCB AIR CONDITIONER (OPTION ITEM #6)

A commercial grade package air conditioning unit shall be furnished to cool the air in the MCB. The air conditioner shall be rated for 8000 BTU/HR, have multiple fan speeds and a thermostat. The air conditioner shall be mounted in the overhead of the MCB.

22.0 DOMESTIC VENTILATION SYSTEM**22.1 GENERAL**

The vessel shall be fitted with an effective domestic ventilation system, as shown on the Domestic Ventilation System Diagram (Drawing 575-02-514). The system shall provide air changes in occupied and unoccupied spaces in accordance with the requirements of the regulatory bodies.

The toilet spaces shall be ventilated by natural supply and mechanical exhaust.

22.2 ACCOMMODATION AND CREW SPACES

Ventilation of the passenger lounge and crew mess shall be by a system of mechanical supply and natural exhaust. Supply air shall be drawn in through louvers on the outboard faces of the pilot house, above Deck 02 to port and starboard. Two 1300 nominal CFM air handlers with electric motor driven supply fans and hydronic coils shall be fitted, one in each supply duct. Each fan shall have a rated capacity of 1300 CFM, at a static head of 0.5" WG. Supply air shall be ducted to positions throughout the spaces served by a branched system with dampers and diffusers, as shown on the Domestic Ventilation System Diagram (Drawing 575-02-514).

Pneumatically and thermostatically operated fire dampers shall be fitted to each outside air inlet and controlled from the emergency station in the pilot house. A recirc/outside air damper system shall be fitted to control the air temperature at the termination of the air handler and the amount of outside air.

A control system for the air handlers will be supplied that modulates the recirc/outside air ratio, the air outlet temperature of the air handler based upon ambient conditions inside and outside the space. Control for the air handlers shall be located in the crew space.

The air handlers shall be located beneath the pilot house deck and draw outside air through louvers in the port and starboard bulkheads.

A USCG approved fire damper shall be fitted behind the each inlet air louver. The fire damper shall be pneumatically released from the emergency station in the pilot house or thermostatically released.

An air handler fan emergency stop will also be provided at the emergency control station located in the pilot house.

22.3 PILOT HOUSE

The pilot house shall be ventilated by a system of mechanical supply and natural exhaust. Supply air shall be drawn through louvers on the side of the pilot house. One direct drive axial, electric motor driven supply fan and 2kWe electric duct heater shall be fitted, with a rated capacity of 225 CFM at a static head of 0.5" WG.

The fan shall be fitted with a suitable arrangement of ducting and dampers to modulate the amount of outside air drawn into the pilot house and direct the air in the pilot house.

22.4 WATER CLOSETS

Toilet spaces shall be ventilated by a system of natural supply and mechanical exhaust. The port passenger, pilot house, ADA, and crew toilets shall be ventilated by identical, in line, single-speed, electric motor-driven exhaust fans. Each fan shall have a rated capacity of 100 CFM at a static head of 0.3" WG. Ducting shall be arranged as shown on the Domestic Ventilation System Diagram (Drawing 575-02-514). The pilot house toilet fan shall exhaust directly to the house side bulkhead.

The water closet ventilation fans shall be operated by a switch located next to the light switch for the space.

23.0 HEATING HOT WATER SYSTEM**23.1 GENERAL**

The vessel's passenger and crew spaces shall be heated primarily by a hot-water circulation system, as described below and as shown on the Domestic Heating System Diagram (Drawing 575-02-511).

The hot water heating plant for heating of the accommodations and indicated compartments shall include an oil-fired, packaged hot water boiler with oil-feed pump and four hot-water circulation pumps, located in the engine room.

Make-up water for the heating hot water system shall be taken from the domestic fresh water system via a pressure regulating valve. Piping shall be provided to transfer the contents of the hot water heating system and boiler to the coolant dump tank in the AMR1.

23.2 HEATING HOT WATER BOILER

One oil-fired, natural circulation, wet base, fire tube package boiler shall be fitted. It shall have a Gross Output rate/Net Water rate of 400,000/380,000 Btu/hr, an oil flow of 4.5 GPH, and a design pressure of 150 PSI. The boiler shall be arranged to burn #2 Diesel fuel meeting ASTM D975.

The boiler's design, construction and installation shall conform to the boiler manufacturer's standards and shall meet the requirements of the applicable regulatory agencies.

A completely automatic modulating fuel oil firing system for diesel oil shall be provided. A combustion air blower shall be mounted in the front casing to supply 100% of the air necessary for combustion to the burner plenum. The burner head shall be of the diffuser type. Access to the diffuser head shall be provided through a hinged door with latch arranged to interrupt the control circuit if opened. Direct ignition of fuel shall be provided. The oil pump set shall be integrally mounted with the blower. A duplex strainer will be fitted in the fuel line to the boiler.

A boiler control panel shall be supplied to include all circuit breakers, starters, switches, indicator lights and meters for operation of the combustion and hydronic circulating equipment. Control devices shall meet all applicable requirements for marine service.

Safety features shall be provided in accordance with the applicable regulatory agency requirements, to include flame failure shutdown, low oil pressure shutdown and fan failure shutdown. An audible alarm with visual indicators for these failures shall be provided on the boiler control panel and MCB. In addition, a boiler failure light shall be provided in the pilot house, located so that it may be easily observed from outside the vessel. All control and safety devices shall be fail-safe.

The boiler, together with all auxiliary components, shall be completely piped and wired and fire tested before delivery to the Contractor, ready for connecting to the fuel oil supply, electric power source, and hot water circulation system. The boiler foundation shall be integral to the boiler requiring only that suitable supports be installed on the ship. The control and gage-boards may be arranged for mounting separately on the ship's structure.

The boiler control panel will also contain the source voltage, circuits and controls to operate the 5 zone circulator pumps.

The boiler controls shall be interfaced with the CO2 discharge system to provide a shut down upon release of CO2. A separate boiler emergency trip push button shall also be furnished to be actuated from the emergency station in the pilot house and from the MCB.

23.3 HOT WATER CIRCULATION PUMPS

Five horizontal, single stage, centrifugal, pumps with single-speed electric motors shall be provided for circulation of heating water. Each pump shall be arranged for thermostat control as described in Section 511.

| | |
|--------------------------|--|
| Liquid pumped: | fresh water + antifreeze + corrosion inhibitor |
| Liquid specific gravity: | 0.983 |
| Liquid temperature | 200°F |
| Rated capacity | 1.6 GPM to 18.5 GPM |
| Rated suction head | flooded |
| System pressure | 35 PSI |

24.0 SEA WATER SYSTEMS

24.1 GENERAL

Seawater systems shall include the following:

- Fire and Washdown system
- Fire Sprinkler system
- Bilge system
- Sanitary System

Seawater systems shall draw directly from a suction main connected to two sea chests; one in the engine room and one in AMR1, located on the bottom of the hull near

centerline. Valved branch connections shall be provided on the main for suction to the following pumps:

- Fire/Bilge pump (engine room)
- Sprinkler pump (AMR1)
- Fire pump (AMR1)
- Bilge pump (engine room)
- Sanitary pump (AMR1)

A connection shall also be provided for the sanitary seawater flushing system in the AMR1.

Each sea chest opening shall be fitted with a perforated bronze or stainless steel screen plate with CRES fasteners. The open area of the sea chest screen plate shall be at least 1.5 x the open area of the sea valve. A compressed air blow-out fitting shall be provided on each sea chest. The suction main shall be provided with flanged steel pipe waster piece adjacent to the sea valve. Simplex basket strainers shall be installed on the supply line to the suction inlet of each pump.

Unless noted otherwise, materials for centrifugal pumps handling seawater shall be as follows:

- | | |
|-----------------------------|---|
| • Casing | Bronze or Stainless Steel (ASTM A 743, Grade CN-7M) |
| • Impeller | Bronze or Stainless Steel (ASTM A 743, Grade CN-7M) |
| • Wear rings | Bronze |
| • Shaft | Monel or Stainless Steel (ASTM A 743, Grade CN-7M) |
| • Shaft sleeves (if fitted) | Bronze or K-Monel |

25.0 FIRE AND WASHDOWN SYSTEM

25.1 GENERAL

The vessel shall be fitted with a seawater system for fire-fighting and deck washdown, as shown on the Fire, Sprinkler, and Washdown System Diagram (Drawing 575-02-521).

One fire/bilge pump shall be installed in the engine room, drawing directly from the seawater main. One fire pump with power from the emergency switchboard shall be installed in AMR1 and shall also draw from the sea chest in the engine room.

A crossover valve shall be fitted to connect the fire main to the fire sprinkler system. The valve shall be closed in normal ship operations, but will allow backup service to the sprinkler system. A valve shall be provided to connect the fire/bilge pump discharge to the overboard discharge line from the bilge system. The valve shall be opened when the operation of the main fire pump is tested, and when the pump is serving as a bilge pump,

but shall be closed when in fire service. A valve shall be provided to connect the fire pump discharge to the overboard discharge line from the bilge system. The valve shall be opened when the operation of the main fire pump is tested but shall be closed in normal ship operations.

The vessel's fire and washdown system shall be of the dry type, with the pumps normally not running and the system drained when the fire pumps are not in operation.

25.2 FIRE PUMP

The vessel shall be provided with one single-stage, horizontal, pedestal type, centrifugal, end suction, single speed motor driven main fire pump, having the following characteristics.

| | |
|-------------------------|----------|
| Liquid pumped | seawater |
| Liquid specific gravity | 1.025 |
| Rated capacity | 168 GPM |
| Rated suction head | flooded |
| Rated total head | 210 ft |

A low voltage release soft start controller will be used to provide power to the motor. On-off stations with run light will be provided locally at the pump, in the MCB and in the pilot house. The local control may be on the motor controller provided the controller is visible from the pump.

A suction and discharge gage will be provided at the pump. A firemain pressure gage will be provided in the MCB and in the pilot house. A firemain pressure low alarm shall also be fitted.

25.3 FIRE/BILGE PUMP

The vessel shall be provided with one single-stage, horizontal, pedestal type, centrifugal, end suction, single speed motor driven standby bilge/emergency fire pump. The pump shall have the following characteristics.

| | |
|-------------------------|----------|
| Liquid pumped | seawater |
| Liquid specific gravity | 1.025 |
| Rated capacity | 168 GPM |
| Rated suction head | flooded |
| Rated total head | 210 ft |

The pump will have a branch suction line to the bilge manifold.

A low voltage release soft start controller will be used to provide power to the motor. On-off stations with run light will be provided locally at the pump, in the MCB and in the pilot house. The local control may be on the motor controller provided the controller is visible from the pump.

A suction and discharge gage will be provided at the pump. A firemain pressure gage will be provided in the MCB and in the pilot house. A firemain pressure low alarm shall also be fitted.

The piping shall be painted and color coded with regard to service.

25.4 FIRE STATIONS

Fire stations shall be arranged as shown on the Fire, Sprinkler, and Washdown System Diagram (Drawing 575-02-521), and generally as follows:

- Engine room – two stations
- AMR1 – one station
- AMR2 – one station
- Steering gear compartment – one station
- Bow thruster compartment – one station
- Main deck (exterior) – two stations
- Port Passenger Space, Deck 01 (interior) – one station
- Starboard Passenger Space, Deck 01 (interior)-one station
- Upper deck, Deck 02 (exterior) – one station

Fire station shall be located so as to meet US Coast Guard requirements for fire protection of specified compartments and areas. Fire stations shall be easily visible and accessible at all times.

One 1½” single bronze hydrant, one 50 ft length of USCG approved 1½” rubber-lined cotton hose, one USCG approved 1½” bronze combination nozzle with 5/8” orifice, storage rack and hose wrench shall be provided for each fire station.

One spare 50 ft length of 1½” rubber-lined cotton USCG approved hose shall be provided.

25.5 FIRE AXES

The vessel shall be equipped with four identical fire axes, in locations complying with US Coast Guard regulations and as approved by the Owner. Each fire axe shall have a six-pound head, and shall be supplied complete with storage rack.

25.6 MAIN DECK FIRE SPRINKLER SYSTEM

A manually controlled, dry seawater sprinkling system shall be installed to protect areas of the main deck beneath the superstructure. The system shall comply with CFR 46 subchapter H for materials, equipment, installation, coverage, and operation.

The fire sprinkler pump shall draw water directly from the seawater main and shall be powered from the emergency switchboard.

Sprinkling system mains and branches shall be sized and located as indicated on the Fire, Sprinkler, and Washdown System Diagram (Drawing 575-02-521). Low points shall be fitted with drains to empty the systems when not in use. Pipe runs shall be sloped to drain water to the low points. A connection to the ship service compressed air system shall be provided to blow out the sprinkling system after use.

A crossover valve shall be fitted to permit the fire sprinkler system to be served by the main fire pump. The valve shall be closed in normal ship operations. A suction line shall be led from the engine room bilges directly to the sprinkler pump, for emergency bilge suction duty. (Drawing 575-02- 529). A valve shall be provided to connect the sprinkler pump discharge to the overboard discharge line from the bilge system. The valve shall be opened to permit the operation of the sprinkler pump to be tested and to discharge bilge water in an emergency, but shall be closed in normal ship operations.

Sprinkler heads shall be of a US Coast Guard approved type, and shall be located in accordance with regulatory requirements.

The piping shall be painted and color coded with regard to service.

25.7 SPRINKLER PUMP

The vessel shall be fitted with one horizontal, end-suction, single stage, centrifugal, pump for sprinkler service. The pump shall be single speed, electric-motor driven. The sprinkler pump shall be arranged for manual starting and stopping from the pilot house. The sprinkler pump shall have the following characteristics:

| | |
|-------------------------|----------|
| Liquid pumped | seawater |
| Liquid specific gravity | 1.025 |
| Rated capacity | 336 GPM |
| Rated suction head | flooded |
| Rated total head | 75 ft |

The pump will have a branch suction line to the emergency bilge suction in the engine room.

A low voltage release soft start controller will be used to provide power to the motor. On-off stations with run light will be provided locally at the pump, in the MCB and in the pilot house. The local control may be on the motor controller provided the controller is visible from the pump.

A suction and discharge gage will be provided at the pump. A sprinkler pressure gage will be provided in the MCB and in the pilot house. A sprinkler pressure low alarm shall also be fitted.

25.8 SPRAY NOZZLES

The vessel shall be fitted with 3/8", non-automatic pattern, open, directional discharge sprinkler nozzles, in the quantity and arrangement required to provide coverage of sheltered portions of the main vehicle deck in accordance with requirements of the regulatory bodies. Sprinkler nozzles shall be of cast bronze construction, and shall have a flow capacity in accordance with applicable US Coast Guard regulations.

26.0 DECK DRAINS AND SCUPPERS

Deck drains shall be fitted in all toilet spaces, the passenger lounge, crew mess, exposed superstructure decks, open superstructure passageways and pilot house as indicated on the Scuppers and Deck Drains System Diagram (Drawing 575-02-526).

Deck drains shall be located to prevent water standing on the decks under ordinary conditions of list and trim. All deck drains shall discharge overboard above the main deck level.

27.0 DOMESTIC SEAWATER FLUSHING, GRAY AND BLACK WATER

27.1 GENERAL

The vessel shall be equipped with a domestic seawater flushing and black water system as shown on the Domestic Gray and Black Water System Diagram (Drawing 575-02-528).

Sanitary seawater for flushing of sanitary fixtures shall be supplied to the toilet spaces from a single hydrophore tank with supply pump. The hydrophore tank, located in the AMR1, shall be supplied with seawater directly from the seawater main.

All black water drains from sanitary fixtures, and gray water drains from sinks and interior deck drains shall be collected by gravity into a single holding tank in AMR1. The tank shall be fitted with a shore discharge connection to suit the Owner's requirements.

Exposed deck and sanitary drains will be insulated and/or protected from freezing with heat trace tape. Drain pipes will have a slope of no less than 1/4" per foot with the vessel at its normal trim towards the drain tank .

The sewage holding tank shall be fitted with a high level alarm and a King Gage pneumatic type level indicator.

Piping shall be painted and color coded with regard to service.

27.2 SEAWATER SANITARY HYDROPHORE UNIT

A hydrophore unit shall be provided for sanitary seawater service, with one vertical, skid-mounted hydrophore tank, and pressure pump. The hydrophore tank shall be of galvanized or stainless welded steel construction. The tank shall be designed and built in compliance with the ASME code. The hydrophore tank shall be fitted with a compressed air fill valve, pressure gage, drain valve, pressure relief valve set at 70 PSIG, and gage glass.

The pressure pump shall be of single-stage, end suction design with single-speed electric motor drive. The pump shall have stainless steel or bronze wetted parts and be suitable for marine use. The pump shall be fitted with a factory preset automatic pressure switch.

The hydrophore unit shall include a check and cut-off valve or stop-check valve between the pressure pump and hydrophore tank. The hydrophore unit shall be complete with a control panel of UL-listed NEMA 1 standard, with disconnect switch and magnetic starter.

The hydrophore unit shall have the following characteristics:

| | |
|-------------------------|----------|
| Liquid | seawater |
| Liquid specific gravity | 1.025 |

| | |
|--------------------------|------------|
| Liquid temperature range | 28 to 86°F |
| Pump Rated capacity | 15 GPM |
| Capacity 100% | 80 gallons |
| Design Pressure | 125 PSIG |

27.3 PLUMBING DRAINS

Black water pipes from water closets shall be led to mains having an easy slope. No other drains shall be connected to these mains. The mains shall be combined into a single line at the sewage holding tank. Cleanout plugs shall be provided where necessary in the black water mains and sharp bends shall be avoided.

Interior deck drains in accommodations and drains from fixtures other than water closets, (gray water) shall be led to mains having a minimum slope of ¼" per foot with the vessel at normal trim and led to the sewage holding tank.

Drain pipes combined with other drains located at a higher elevation shall be designed to prevent back flooding. Drain lines shall be properly vented to the weather. Black water vent lines shall not be less than NPS 1½, and gray water vent lines shall not be less than NPS 1.

28.0 BILGE SYSTEM

28.1 GENERAL

The vessel shall be fitted with an effective bilge drainage system, as shown on the Bilge System Diagram (Drawing 575-02-529). The system shall comply with all applicable requirements of the regulatory bodies.

One independent electric-driven fire/bilge pump shall be installed in Engine Room, arranged to draw from a bilge suction manifold and discharge overboard. At least one suction line with inlet strainer shall be led to the manifold from each watertight space below the main deck, located in accordance with ABS and US Coast Guard regulations. There shall be no valves in the lines between the suction and the manifold.

A machinery space oily water drainage pump shall also be provided. The pump shall draw oily bilge water from containments/cofferdams beneath the main propulsion engines and the bow thruster engine in the engine room, the engine room itself, the AMR1, the AMR2, the steering gear compartment, bow thruster compartment and elevator pit. The pump shall discharge to the oily water tank. The pump shall also be arranged to take suction from the oily water holding tank and discharge to a connection above the main deck for shore disposal.

One bilge pump shall be installed in the engine room arranged to draw from a bilge suction manifold and discharge overboard. In addition, the sprinkler pump shall be arranged to draw from a single emergency bilge suction near the lowest point in the engine room and discharge overboard.

Bilge water level alarms shall be fitted in all compartments below the main deck and in the elevator pit.

Bilge and oily water piping will be painted and color coded with regard to service.

The oily water tank shall be fitted with a high level alarm and a Gems Suresite level indicator (or equivalent).

The oily water drainage pump shall have an emergency stop push button located at the deck transfer station.

28.2 BILGE PUMP

The vessel shall be fitted with a horizontal, end-suction, self priming, single stage centrifugal pump, for bilge suction service. The pump shall be single speed, TEFC 1800 rpm electric-motor driven. The pump shall have the following characteristics:

| | |
|-------------------------|----------|
| Liquid pumped | seawater |
| Liquid specific gravity | 1.025 |
| Rated capacity | 137 GPM |
| Rated suction lift | 10 ft |
| Rated total head | 40 ft |

28.3 MACHINERY SPACE OILY WATER DRAINAGE PUMP

The vessel shall be fitted with Flomax MP-5 (or equivalent) horizontal, rotary, self-priming, centrifugal pump, for cofferdam suction service. The pump shall be single speed, TEFC electric motor driven, and shall have the following characteristics:

| | |
|---------------------------|---|
| Liquids pumped | fresh and saltwater, fuel, lube and diesel oils, etc. |
| Liquid specific gravities | 0.90 to 1.025 |
| Rated capacity | 20 GPM |
| Rated suction lift | 15 ft |
| Rated discharge pressure | 15 PSIG |

28.4 SHAFT LOG SUMP PUMPS

A submersible automatic shaft log sump pump and drain box shall be fitted to each shaft. The pumps will be equipped with a float switch and automatically discharge the accumulation of shaft seal leakage overboard. The pumps will be commercial grade. Wetted parts shall be bronze or stainless steel.

29.0 FRESH WATER SYSTEMS

29.1 GENERAL

The following fresh water systems shall be fitted:

- Domestic fresh water supply system
- Fresh water cooling system

The vessel shall be provisioned with fresh water from the Owner's shore installations.

Potable fresh water shall be stored in a tank in AMR2. Make-up water for the cooling water system and domestic hot water heating system shall be drawn from the domestic water system.

29.2 DOMESTIC WATER SUPPLY SYSTEM

The vessel shall be equipped with a potable fresh water supply system as shown on the Domestic Water Supply System Diagram (Drawing 575-02-533).

Potable water systems shall be supplied throughout the vessel by a single hydrophore tank with supply pump, located in AMR2. The hydrophore tank shall be filled from the vessel's fresh water tank. Hot water shall be provided by a compact hot water heater located inside the crew mess, supplied from the hydrophore tank.

Hot and cold potable fresh water shall be provided to washbasins and sinks in the toilet spaces, crew mess, and pilot house. Cold potable water shall be provided to a washbasin/drinking fountain in the engine room and to hose connections in the engine room, on the main deck, and on Deck 02. Cold and hot water supply lines to the crew WC and starboard WC shall be fitted with spigots below the installed vanity, for cleaning purposes.

The potable water tank shall be filled directly from the main deck, via a 1½" filling line. The deck filling line shall be fitted with a hose valve having a cap with a special screw thread, which will be different from all other hose threads used aboard the vessel.

All potable water pipes shall be protected from freezing either by application of heat tape or by locating pipe runs so that they are exposed to heat.

Potable pipes will be painted and color coded with regard to the fluid and system use.

A vacuum break shall be fitted between the potable water supply piping and the boiler make up pressure regulator.

29.3 HYDROPHORE SKID WITH PUMP

A hydrophore unit shall be provided for potable fresh water service, with one vertical, skid-mounted, hydrophore tank and pressure pump. The hydrophore tank shall be of galvanized or stainless welded steel construction. The tank shall be designed and built in compliance with the ASME code. The hydrophore tank shall be fitted with a compressed air fill valve, pressure gage, drain valve, pressure relief valve set at 70 PSIG, and gage glass.

The pressure pump shall be of single-stage, end suction design with single-speed electric motor drive. The pump shall have stainless steel or bronze wetted parts and be suitable for marine use. The pump shall be fitted with a factory preset automatic pressure switch.

The hydrophore unit shall include a check and cut-off valve or stop-check valve between the pressure pump and hydrophore tank. The unit shall be complete with a drip proof control panel, with disconnect switch and magnetic starter. The hydrophore unit shall have the following characteristics:

| | |
|--------------------------|-------------|
| Liquid | fresh water |
| Liquid specific gravity | 1.0 |
| Liquid temperature range | 35 to 86°F |
| Pump Rated capacity | 15 GPM |
| Capacity | 80 gal |
| Design Pressure | 125 PSIG |

29.4 HOT WATER HEATER

The vessel shall be fitted with one commercial electric, potable hot-water heater unit. The hot water heater shall have storage capacity of 20 gallons, and be able to heat fresh water from 40°F to 140°F in 60 minutes. The water temperature leaving the heater shall be thermostatically regulated. The hot water heater shall be constructed of glass-lined steel with copper heating coils.

| | |
|-----------------|----------|
| Capacity | 20 gal |
| Design Pressure | 150 PSIG |
| Heat Transfer | 3 kW |

The hot water heater shall be fitted with an approved temperature/pressure relief valve.

30.0 FRESH WATER COOLING SYSTEM

30.1 GENERAL

The vessel shall be fitted with a closed-loop, treated fresh water cooling system as shown on the Fresh Water Cooling System Diagram (Drawing 575-02-536). An independent cooling circuit with dedicated keel cooler shall be provided for each main propulsion engine, main engine aftercooler, bow thruster engine, and each ship's service generator prime mover.

Fresh water for cooling shall be drawn from an integral tank on each engine or prime mover. Make-up water shall be taken from the domestic fresh water system via a hose. Circulating pumps for fresh-water cooling shall be engine-mounted and integral. The aftercooler cooling system for each main propulsion engine shall also cool the lube oil from the corresponding reduction gear.

Temperature gages shall indicate the freshwater temperature at the inlet and discharge of each heat exchanger. Temperature gauges and alarms shall be installed and set in accordance with the engine manufacturer's directions.

Auxiliary jacket water expansion tanks shall be fabricated and installed in accordance with the recommendations of the engine manufacturer.

A suitable number of vent plugs shall be provided to facilitate the venting of the grid coolers and the piping to and from the engines.

30.2 COOLANT DUMP TANK (OPTION ITEM #7)

The vessel shall be equipped with a cooling water dump tank located in AMR1. The tank shall be of sufficient volume to contain all fluid in the cooling systems of both main

propulsion engines. A coolant transfer pump shall be arranged to transfer cooling water to or from the dump tank. The dump tank shall be fitted with a Gems Suresite tank level indicator.

30.3 KEEL COOLERS

Keel coolers shall be of the water-cooled grid type, Fernstrum Gridcooler (or equivalent). Keel coolers shall be installed on the hull bottom, in a location where they shall be sheltered from damage due to berthing or dry-docking. Keel cooler hull penetrations shall be enclosed in a watertight box as shown on the Fresh Water Cooling System Diagram (Drawing 575-02-536). All keel coolers shall be installed in compliance with manufacturer's recommendations.

Each main propulsion engine shall be fitted with a separate cooling circuit for jacket water and for the aftercooler. Main propulsion engine jacket water and aftercooler keel coolers shall be sized to maintain recommended engine operating temperatures with the engine operating at 100% MCR, at a vessel speed of 9 knots or greater with an ambient water temperature of 85°F.

30.4 BOW THRUSTER KEEL COOLER (OPTION ITEM #8)

The bow thruster engine, bow thruster HPU and each ship's service generator prime mover shall each be fitted with an independent cooling circuit. Keel coolers for the bow thruster engine, bow thruster HPU and ship's service generator prime movers shall be sized to maintain recommended engine operating temperatures with the engine operating at 100% MCR, at a vessel or current speed of 1 knot, with an ambient water temperature of 85°F. The bow thruster HPU grid cooler will be used to transfer heat from the coolant circulating through the HPU oil cooler.

30.5 COOLING WATER EXPANSION TANKS

Cooling water expansion tanks shall have capacities as recommended by the engine manufacturer and appropriate to the volume of the cooling circuit served.

30.6 COOLANT TRANSFER PUMP (OPTION ITEM #7)

The vessel shall be fitted with a Viking 4195 (or equivalent) horizontal, positive displacement pump with single speed TEFC electric motor and integral relief valve, to transfer coolant to and from the dump tank. The pump shall have the following characteristics.

| | |
|-------------------------|--------------------------|
| Liquid pumped | fresh water + antifreeze |
| Liquid specific gravity | 0.983 |
| Liquid temperature | 100°F |
| Rated capacity | 15 GPM |
| Rated suction head | flooded |
| Rated discharge head | 30 ft |

31.0 LUBE OIL SYSTEM**31.1 GENERAL**

The vessel shall be fitted with a lubricating oil system as shown on the Lubricating Oil System Diagram (575-02-543).

A lube oil storage tank shall be fitted in the engine room. Lube oil shall be provided to all internal-combustion engines and main propulsion gearboxes by means of an air pump and a hose with nozzle. A re-settable, inline flow meter shall be fitted to record the quantity of lube oil transferred.

The lube oil tank shall be filled by an NPS 2 line led from a hose connection on the main deck.

The lube oil tank shall be fitted with a Gems Suresite (or equivalent) type liquid level gage and a high level alarm.

The lube oil tank shall also be fitted with a pneumatically operated quick closing valve on the tank outlet operable from the emergency station in the pilot house.

31.2 LUBE OIL PUMP

The vessel shall be provided with one compressed-air driven, double-acting piston pump for lube oil transfer service. The pump shall be of stainless steel construction, and shall have the following characteristics.

| | |
|-------------------------|-----------------|
| Liquid pumped | Lubricating oil |
| Liquid specific gravity | 0.90-0.95 |
| Liquid temperature | 40°F |
| Rated capacity | 4.0 GPM |
| Rated suction head | - |
| Rated discharge head | 24 ft |
| Pump design pressure | 100 PSIG |

31.3 LUBE OIL FILL HOSE

The vessel shall be provided with one 1/2" x 50-foot long hose, approved for oil service. The hose shall be complete with self-closing filling valve and no-drip nozzle. It shall be stored on a hose reel with spring-assisted rewind.

32.0 COMPRESSED AIR SYSTEM**32.1 GENERAL**

A compressed air system shall be provided to supply compressed air for starting the main engines and the bow thruster engine. In addition, the system shall supply the ship's service compressed air and the ship's air horns, pneumatic tank level indicating system and emergency fan damper and quick closing valves. The system shall be arranged as shown on the Compressed Air System Diagram (Drawing 575-02-551).

Compressed air shall be supplied by two identical air compressors, discharging to two

identical air receivers, through a common line. The total air capacity of the receivers shall be sufficient to provide at least six consecutive starts of either main propulsion engine. The air receivers shall discharge through a common line branching to each air starter motor and to a 150/100 psig pressure reducing station. The compressors and receivers shall be installed in the AMR2.

Dedicated compressed air outlets shall be provided for the sea chest cleanout fitting and lube oil system air pump. Compressed air service outlets shall be fitted at two positions in the engine room, in the AMR1 (adjacent to the workbench), AMR2 and at one position on the main vehicle deck.

Operation of the main air compressors shall be by an automatic dual pressure control system. Two adjustable pressure switches shall be provided. The lead and standby compressors shall be arranged to interchange after each cycle. A selector switch shall be provided for selection of manual or pressure control operation for each main starting air compressor. Automatic unloading features shall be provided for each main air compressor when operating continuously against a discharge pressure in excess of 160 PSIG.

32.2 COMPRESSOR

The vessel shall be fitted with two identical single-acting, two-stage, TEFC electric motor driven, air-cooled reciprocating compressors complete with V-belt guard, automatic start/stop on demand, air inlet filter and silencer. Each compressor shall be pressure lubricated with oil filter. Each compressor shall have the following characteristics.

| | |
|--------------------|----------|
| Capacity | 17 SCFM |
| Discharge Pressure | 150 PSIG |

32.3 AIR DRYER

The vessel shall be fitted with one air dryer shall of the automatic, refrigerant type, with dew point indicator.

| | |
|------------------|----------|
| Capacity | 10 SCFM |
| Outlet dew point | 35°F |
| Design Pressure | 150 PSIG |

32.4 AIR RECEIVER

The vessel shall be fitted with two identical horizontal, cylindrical, carbon steel compressed air receivers. Air receivers shall be steel pressure vessels built to ASME Section VIII, galvanized, with air inlet connection, pressure gauge, pressure relief valve, manual and automatic drain valve and access manhole.

| | |
|-----------------|-------------|
| Capacity | 240 gallons |
| Design Pressure | 200 PSIG |

An additional air receiver shall be provided for emergency station shut down air in the pilot house. The air receiver shall be filled from the compressed air system and provided

with check valves to maintain a sufficient air charge to operate the pneumatic quick closing valves and fire dampers.

33.0 FIRE EXTINGUISHING SYSTEMS

33.1 GENERAL

Two carbon dioxide fire extinguishing system shall be installed in the vessel. The Contractor shall obtain USCG approval for the CO₂ systems. The systems shall provide coverage to the engine room and emergency generator compartment. The systems shall include time delays and alarms and shall be capable of normal operation during an emergency when there is no electrical power available on the vessel. All systems shall be designed and installed in accordance with the applicable regulations of the US Coast Guard.

33.2 CO₂ FIRE EXTINGUISHING SYSTEM, ENGINE ROOM

A fixed carbon dioxide fire extinguishing system shall be installed to provide total flooding of the engine room. CO₂ storage cylinders and pressure-operated stop valves shall be located in AMR2 as indicated on machinery arrangement plan.

The system shall be arranged for manual operation with primary discharge control adjacent to the bottles, in the AMR2. A second, remote release control shall be fitted in the pilot house at the emergency station. The activation mechanism may be of the mechanical (pulley) or nitrogen inert-gas type.

The CO₂ cylinders shall be stowed and arranged in banks of not more than two with multiple supporting straps to withstand physical and temperature shock during operations. Arrangement shall be such that two cylinders may be released and weighed at a time without disturbing the other cylinders. A pneumatic time delay shall be incorporated in the system to delay the release of CO₂ for a period of not less than 20 seconds during which time a gas operated alarm shall sound in the protected space, including the machinery control enclosure.

On release of CO₂, gas operated switches shall shut down all engine room ventilation fans, fuel and lube oil pumps.

33.3 CO₂ FIRE EXTINGUISHING SYSTEM, EMERGENCY GENERATOR COMPARTMENT

A fixed carbon dioxide fire extinguishing system shall be installed to protect the emergency generator compartment on the 02 deck. The CO₂ cylinder shall be located in the emergency generator room. A CO₂ release pull box shall be located outside the entrance to the space and shall have a pneumatic time delay to delay release of the CO₂ for a period of not less than 20 seconds during which time a gas operated alarm shall sound in the protected space. On release of the CO₂, the EDG engine shall stop and the radiator inlet/outlet shall close.

33.4 PORTABLE AND SEMI-PORTABLE FIRE EXTINGUISHERS

Portable and semi-portable fire extinguishers shall be provided generally (final number to

be determined) in the following numbers, types, and sizes.

- Six, 2.5-gallon portable, foam extinguishers (US Coast Guard Type A-II)
- Four, 10-lb portable, standard dry chemical extinguishers (US Coast Guard Type B-II/C-II)
- Four, 4-lb portable carbon dioxide extinguishers (US Coast Guard Type C-I)
- One, 12-gallon semi-portable foam extinguisher (US Coast Guard Type B-III)

All fire extinguishers shall meet applicable US Coast Guard requirements.

A suitable bracket or support shall be installed for each extinguisher. Fire extinguishers in passenger areas shall be enclosed in metal cabinets with a metal-framed glass door.

34.0 SHIP CONTROL SYSTEMS

34.1 GENERAL

The vessel shall be steered by twin spade rudders driven by electro-hydraulic steering gear. A bow thruster with dedicated engine shall be fitted to assist low-speed maneuvering.

34.2 STEERING SYSTEMS

The vessel shall be equipped with Jastram Model S (or equivalent) steering system capable of moving the rudders from 35 degrees on either side to 35 degrees on the opposite side in 22 seconds with the ship proceeding ahead at the maximum trial speed. Physical stops shall be fitted to limit the maximum travel of each rudder.

Steering control shall be possible from the forward control station in the pilot house, umbilical and from the steering gear compartment.

The vessel shall have two identical, electro-hydraulic, double acting piston type steering gears with a jockey bar between the tiller arms. Each steering gear shall be connected to a double-arm tiller.

The steering gear system and all components shall meet the applicable requirements of the CFR 46 subchapter H. The steering gear system shall be from a single manufacturer, and shall be supplied complete.

34.3 STEERING GEAR POWER PACK

Two independent electro-hydraulic steering gear power packs shall be provided, complete with drive motors and hydraulic reservoirs. Each unit shall be of sufficient size and power to operate both rudders simultaneously.

The steering gear HPU's shall be electrically sourced and protected per CFR 46. One HPU shall be sourced from the main switchboard and the other from the EDG switchboard.

34.4 STEERING GEAR CONTROLS

Primary steering shall be by means of wheel steering controls with follow-up action, located at the control station in the pilot house. Non-follow up emergency steering via a jog lever shall also be provided to both control stations in the pilot house.

Emergency steering shall also be possible using a non-follow-up lever controller located in the steering gear compartment.

One set of electrical rudder position indicators shall be installed in a readily-visible location at the control station in the pilot house.

The rudder position indicator at the steering gear room steering station shall be degree markings on the tiller and a fixed pointer. These markings shall be indelible and have high contrast from the background.

Steering gear alarms as specified in CFR 46 subchapter H shall be provided at the steering control box in the steering gear room and in the pilot house. A steering gear trouble alarm shall be provided on the MCB alarm panel.

35.0 RUDDER**35.1 GENERAL**

The vessel shall be equipped with two identical plate-type spade rudders, as shown on the Rudder Arrangement (Drawing 575-02-562).

35.2 RUDDER AND RUDDER STOCK

The vessel shall be fitted with two, plate-type, single stiffened spade rudders, each with an area of 28 ft². Each rudder shall have a mild steel blade and an ABS Grade 2 forged steel stock. The stock shall have a bolted palm connection and be tapered as shown on the Rudder Arrangement (Drawing 575-02-562).

36.0 MANEUVERING SYSTEMS (OPTION ITEM #8)**36.1 GENERAL**

The vessel shall be fitted with a hydraulic bow thruster, as shown on the Bow Thruster Arrangement (Drawing 575-02-568). The thruster shall be powered by a hydraulic pump in the engine room, itself driven by a dedicated diesel engine.

Bars or screens shall be fitted to the bow thruster openings in the hull to protect the thruster from waterborne debris. The thruster tunnel shall be faired into the hull as necessary to maximize bow thruster efficiency while minimizing hull resistance.

Primary control of the bow thruster shall be from the pilot house as described above. Local controls shall also be fitted in the bow thruster compartment for emergency use.

36.2 BOW THRUSTER

The vessel shall be fitted with a hydraulic, variable speed, reversible, transverse tunnel-type bow thruster, Thrustmaster Model 36TT-250L1 (or equivalent). The thruster shall have a nominal static bollard thrust of 5250 lbf.

The bow thruster unit shall be supplied complete with engine flywheel hydraulic pump adapter, torsional coupling, hydraulic power pack, reservoir, oil cooler, filters and accessories, and remote bridge control panel.

36.3 BOW THRUSTER ENGINE

The bow thruster shall be powered by a dedicated, inline, non-reversing, high-speed marine diesel engine, Caterpillar Model C-9 (or equivalent). The bow thruster engine shall be rated for intermittent operation at 100% MCR. It shall produce at least 310 BHP at 1800 RPM. All engine auxiliaries shall be sized for the maximum continuous rating of the engines. The bow thruster engine shall be designed to burn #2 fuel.

The bow thruster engine shall be of four-stroke, six-cylinder design. The bow thruster engine shall be provided with a control system, air-start system, exhaust system, flywheel, keel-cooling water system, fuel system, instrumentation, lube oil system, mounting system, and electronic protection system. The bow thruster engine shall be equipped with integral fuel pumps, lubricating oil circulating pump, and similar accessories. The engine shall be mounted on "Chockfast Orange" poured solid chocks.

The bow thruster engine shall be supplied with a local Engine Control Panel, including local start and stop pushbuttons. The engine shall be supplied with Start and Control Panels, including start buttons, emergency stop buttons, control transfer buttons, RPM indicators, and monitoring gages, to be installed in the MCB and the pilot house.

The bow thruster engine shall have been designed for marine operation and shall have a successful history in marine applications. It shall be compliant with the applicable US federal standards for exhaust emissions. The bow thruster engine shall meet US Coast Guard requirements for attended operation. The bow thruster engine shall be designed, constructed, and tested in accordance with ABS requirements, except that ABS certification and stamping is not required.

The bow thruster engine will be interfaced with the CO2 system to shut down upon the release of CO2 into the engine room.

36.4 BOW THRUSTER HYDRAULIC POWER PACK

A modular hydraulic power unit shall be provided for the thruster. The power pack shall consist of a hydrostatic transmission variable-displacement axial piston hydraulic pump with electric variable swashplate controller. The power pack shall be supplied complete with engine flywheel pump adapter with torsionally resilient coupling and loop flushing pump.

36.5 BOW THRUSTER HYDRAULIC RESERVOIR

A hydraulic reservoir shall be supplied with thruster per the thruster manufacturer's requirements. The reservoir shall be complete with oil level gage, temperature gage, low oil level alarm, high temperature alarm and any other alarms and monitoring deemed necessary by the vendor.

36.6 BOW THRUSTER OIL COOLER

A water to oil heat exchanger will be provided to remove the heat generated by the bow thruster hydraulics. The cooler shall be sized to remove the hydraulic heat at full rated power. A water circulating pump shall also be furnished, driven from an HPU or engine PTO to circulate cooling water through the heat exchanger and the bow thruster oil grid cooler.

36.7 BOW THRUSTER ALARMS

A common bow thruster trouble alarm will be interfaced with the vessel's alarm system. The trouble alarm will be visible in the pilot house and MCB.

37.0 WASTE OIL AND OILY WATER SYSTEMS**37.1 GENERAL**

The vessel shall be fitted with waste oil and oily water collection and transfer systems, as shown on the Waste Oily and Oily Water System Diagram (Drawing 575-02-593).

Each main propulsion engine, ship's service generator prime mover and bow thruster engine shall be fitted with a suction line led directly from the engine's oil sump to a waste oil pump. The pump shall discharge waste oil to a waste oil/sludge holding tank or to the oily bilge water holding tank.

Oily bilge water from the engine room shall be pumped into the oily bilge water holding tank or to the waste oil/sludge holding tank by the machinery space automatic drainage pump. A suction line shall be led from each tank to the main deck, to permit the tanks to be emptied at the Owner's collection facilities. The contents of the waste oil/sludge holding tank shall be pumped out by the outside means. Contents of the oily bilge water holding tank may be pumped out by the machinery space automatic drainage pump or by outside means. (Drawing 575-02-529)

The oily water holding tank and the waste oil/sludge collection tank shall each be fitted with a high level alarm and a Gems Suresite level indicator (or equivalent).

37.2 WASTE OIL PUMP

One Viking 4195 (or equivalent) horizontal, rotary, positive displacement, self-priming pump with single-speed, electric-motor drive and integral safety relief valve shall be installed in the engine room. The pump shall have the following characteristics.

| | |
|---------------------------|-----------------|
| Liquids pumped | Lubricating oil |
| Liquid specific gravities | 0.90 to 0.95 |
| Rated capacity | 15 GPM |
| Rated suction lift | 15 ft |
| Rated discharge pressure | 20 PSIG |

The waste oil pump will have an emergency shutdown switch located at the deck waste oil transfer station and be interfaced with the CO2 discharge switch.

38.0 ELECTRICAL SYSTEM**38.1 GENERAL**

Electrical power shall be generated by two 92 kWe 3 phase 240 V ship's service diesel generator sets. Each generator shall be independently capable of supplying the ship's regular power requirements. Generated AC power shall be supplied to the main ship's service switchboard and by means of a bus-tie link to the emergency switchboard. The ship's service 120V section of the main switchboard shall be supplied via 3 -phase, 30 kVA, 240V/120V transformers. The plans indicate that the gensets will be electric start 92 kWe Northern Lights M1064A units (or equivalent), however, air start units, if available, may be supplied provided the requisite plans are modified.

Emergency electrical power shall be generated by a 66 kWe 240 V 3 phase AC generator and supplied to the emergency switchboard. The emergency 120V section of the emergency switchboard shall be supplied via 3 phase, 30 kVA, 240V/120V transformers. The plans indicate that the emergency genset will be an electric start 66 kWe Northern Lights NL1064T1 (or equivalent) adapted for marine use, however, air start units, if available, may be supplied provided the requisite plans are modified.

A shore power 240V, 3-phase, 60 Hz connection shall be provided. The shore power connection circuit breaker shall be interlocked to prevent operation should the main bus be energized.

The main ship's service switchboard and the emergency switchboard shall each have 240V, 3-phase, 3-wire, 60 Hz and a 120V, 3-phase, 3-wire, 60 Hz sections.

All electrical machinery installed in the vessel, including generators, fan motors, pump motors, etc., shall be rated for operation with temperature rise of 50°F. All pump motors and fan motors shall operate on 240V, 3-phase, 60 Hz or 120V, 1-phase, 60 Hz power.

38.2 (OPTION ITEM #9)

Parallel operation between generators is not required but shall be available short term, for uninterrupted, power transfer purposes.

38.3 SHIP'S SERVICE GENERATOR SETS

The vessel shall be equipped with two identical ship's service diesel generator sets, Northern Lights M1064A (or equivalent). Each generator shall have a prime power rating of 92 kWe, at a rated speed of 1800 RPM.

Each generator and prime mover shall be mounted on a common skid. The diesel generator sets shall be installed in the Engine Room, on noise and vibration damping mounts.

Each generator prime mover shall have been designed for marine applications, and shall have a successful history in such applications. Each generator prime mover shall be designed, constructed, and tested in accordance with ABS requirements, except that ABS certification and stamping is not required.

The generator engines shall be electric started and each engine shall have a normal continuous capacity at its marine rating sufficient to meet the rating of its generator. The generators shall be of the brushless, air-cooled, open drip-proof type. Generator output shall be 240 V, 60 hertz, 3-phase, 0.8 PF. The system, consisting of the engine and connecting masses rotating with the engine shall have no dangerous peaks of torsional vibration within the operating range. The operating range shall be considered to be up to the overspeed governor setting.

The diesel generator sets shall operate satisfactorily under normal conditions of ship's pitch, roll and inclination and shall be arranged so that they will not spill oil with the ship rolling 30 degrees to each side of the vertical.

Each generator prime mover shall be equipped with integral cooling water pumps, fuel pumps, lubricating oil circulating pumps, and similar accessories. The generator sets shall have standard instrumentation including pressure gage panel with tachometer, hour meter and shut down and alarm sensors, all contained within a local operating panel. Duplicate analog pressure and temperature gages shall be provided on the MCB console.

The diesel generator sets shall be provided with drip containment to retain any liquid leakage from the units. The containment shall be easily accessible for cleaning.

Other accessories, air intake filters and silencers, governing system, generator exhaust muffler, instrument boards, integral piping, valves, etc. shall be provided as required for a complete and workable installation.

Means shall be provided within the MCB to stop, start and emergency stop each generator.

Each generator shall have a trouble and failure alarm that can interface with the vessel's machinery alarm panel. The specific alarm fault or failure shall be indicated at the local control panel.

The generator engine shall also be filled with an anti-freeze/water mixture prior to commissioning and vessel delivery. The protection shall be to -10 F. The anti-freeze type shall be that recommended by the manufacturer.

Each generator prime mover shall be compliant with the applicable US federal standards for exhaust emissions in effect at time of construction.

The alternator end of the gensets shall be fitted with strip heaters that operate during idle periods.

The generator engines shall be interfaced with the CO2 system so that the engine will shut down upon the release of CO2.

38.4 EMERGENCY GENERATOR SET

The vessel shall be equipped with one Northern Lights NL1064T1 (or equivalent), 66 kWe 240 V 3 phase emergency generator set, located in the emergency generator compartment on Deck 02. The emergency generator shall be of the same manufacturer as the ship's service diesel generator sets.

The emergency generator shall be capable of starting automatically and assuming the ship's emergency electrical load within 45 seconds of loss of voltage at the ship's service switchboard. On start up of the emergency generator, the bus-tie circuit breakers will open to prevent any parallel operation of the ship's service generator with the emergency generator.

The emergency generator shall be battery started, and shall be cooled by a local radiator with fan, but shall be similar to the ship's service generators in all other respects of equipment, accessories, and controls. The emergency generator engine shall be equipped with a thermostatically controlled electric jacket water heater to assist cold starts.

The emergency generator shall be provided with a fuel supply independent of that for the ship's service generator sets. The fuel supply shall be sufficient for 8 hours of operation at normal load. A shut off valve for the fuel tank shall be operable from outside of the space.

The emergency generator room shall be equipped with electrically operated dampers that open automatically when the generator starts and close when the generator stops.

The generator will be interfaced with the EDG room's fixed CO2 system so that the engine will stop and the dampers close automatically when CO2 is released into the space.

The emergency generator will have separate alarms for overcrank, start failure, overspeed, low oil pressure and low water temperature. An indication will be made for EDG running at the vessel's alarm panel.

The starting batteries shall be capable of starting the engine 6 times without recharging and without the use of starting aids.

The alternator end of the emergency genset shall be fitted with a strip heater that operates during idle periods.

The starting batteries shall be located in a ventilated weather proof box outside of the EDG room.

38.5 BATTERIES AND CHARGERS

There shall be two (2) 24VDC distribution systems and panels, one for essential navigation systems and one for machinery space safety systems. Each 24 VDC distribution system consists of a 24 VDC power supply, battery bank and distribution panel. Power for each power supply shall be supplied from the normal or emergency 120 VAC bus via an automatic changeover relay. In addition, each 24 VDC distribution panel will be furnished with an automatic voltage sensing switch so that power may be supplied by either battery bank and power supply. Each power supply shall be sized to provide the normal emergency load of both distribution panels and simultaneously charge either battery bank. Each battery bank shall be sized to provide in excess of 30 minutes of power without the need for recharging.

There shall be a 24 VDC power supply, battery bank and distribution panel to furnish

power for the electronic engine controls on the two main engines and the bow thruster engine. Like the essential and machinery space 24 VDC systems, these power sources are connected to the main or emergency 120 VAC buses through automatic transfer switches and then to each 24 VDC output through automatic voltage sensing switches. Each 24 VDC power supply is sized to provide the normal load of both main engines, the bow thruster and simultaneously recharge the batteries. Each battery bank is sized to provide in excess of 30 minutes of power to both main engine and bow thruster control systems without the need for recharging.

A 24 VDC starting system is also provided for the two main generators. The starting batteries are capable of starting either engine more than 6 times without needing recharging. The starting batteries shall be capable of being paralleled. Each starting battery shall be maintained fully charged by a dual output battery charger. Each generator engine shall be equipped with an 80Amp alternator to recharge the batteries while running.

Batteries for the essential services and the machinery space alarms shall be stored in a dedicated battery room located aft of the pilot house. The distribution panels, switches and power supplies for these services shall be located in the pilot house.

The battery room shall be equipped with natural ventilation from ductwork located in the bottom and top of the locker. An explosion proof light fixture shall be provided in the overhead.

The battery room and battery containers are to be lined in accordance with CFR 46 subchapter H.

The main engine and bow thruster control batteries and the ship's service generator starting batteries shall be located in the engine room. They shall be placed in ventilated approved battery boxes and protected from falling liquids and debris.

Each 24 VDC battery charger and power supply shall be fitted with failure contacts that are interfaced with the vessel's alarm panel. Each battery charger and power supply shall also have a volt meter and ammeter.

The normal/emergency 120 VAC source selector switches shall have an alarm contact when the emergency source is selected.

The 24 VDC distribution system shall not be grounded to the vessel's hull. Each circuit shall originate at the battery bank's positive terminal and return to the negative terminal. A ground detection system shall be provided for each distribution panel and be monitored from the MCB. The ground detection system shall monitor the DC voltage plus or minus to the vessel.

24 VDC system used for genset engine starting shall have the negative terminal grounded to the vessel's hull.

Battery chargers and power supplies shall be properly selected for the type of battery they are used with.

Each solid state rectifier shall meet the requirements of CFR 46 subchapter H and ABS with regard to reliability, performance, electrical noise and safety.

39.0 POWER DISTRIBUTION SYSTEM

39.1 GENERAL

The vessel's power distribution system shall be arranged in accordance with the Electrical Distribution System One-Line Diagrams (Drawing 575-02-320).

Power cable used on the vessel shall be cross-linked polyethylene insulated (type X), unarmored, PVC jacketed, as specified in IEEE Std 45, 600V rated. Where cable is installed in external areas of the ship or in locations where it is subject to damage, it shall be mechanically protected with armor or some other suitable means. For the purpose of the one line diagrams, 75 C cable ampacity was used for each feeder and branch circuit.

The minimum cable size for all power circuits shall be 6530 circular mil (12 AWG). The minimum cable size for lighting circuits shall be 4110 circular mil (14 AWG).

Cable used for control and indication systems shall be multiple shielded pairs, 16AWG, with PVC insulation and jacket or co-axial cable and be of a type recommended for shipboard use by IEEE.

Cables shall be run single banked in cable trays throughout the ship as required. Cables shall be properly supported as required. In passenger spaces, cables shall be run above ceiling panels.

Cables shall be marked with their circuit designations at the terminations of each cable at a distribution panel, junction box, controller, device, etc. The circuit designations shall be indelibly marked on a metal tag securely fastened around the cable.

A 100A, 240V, 3-pole + ground, watertight receptacle shall be provided. The receptacle shall be connected by cable to the main switchboard as a source of shore power. The receptacle shall be located on the upper deck bulwark in a location to suit the shore facility. Adjacent to the receptacle shall be stowed a reel holding 100 feet of rough service, flexible cable with a plug matching the receptacle at each end. The configuration of the receptacle and plugs shall be determined by the Owner. At the switchboard, there shall be the means to check phase rotation, prior to closing the shore power breaker, which shall also be fitted with an interlock to prevent closure onto a live board.

120V, 15A, duplex general-purpose receptacles shall be installed throughout the vessel as shown on the Lighting Plan (Drawing 575-02-332).

Main and emergency switchboards shall be provided. The main switchboard shall be located within the machinery control enclosure in the engine room. The emergency switchboard shall be located within the emergency generator compartment. Switchboards shall comply with applicable CFR 46 subchapter H.

Each switchboard shall have a 240V, 3-phase, 60Hz and a 120V, 3-phase, 60Hz distribution section. The main switchboard shall contain circuit breakers for the ship's service generators, shore power, emergency bus-tie and power distribution.

The emergency switchboard shall contain circuit breakers for the emergency generator, emergency bus-tie and power distribution.

The switchboards shall be dead-front, drip proof and completely accessible from the front. Blank panels shall be incorporated for future electrical installations.

Each switchboard shall have the instrumentation and controls as delineated in the ABS Rules for Building and Classing Steel Vessels Under 295'.

Where possible, shunt trips shall be used to secure equipment that will be stopped in the event of fire.

Circuit breakers shall have a minimum 10,000 AIC.

Circuit breakers shall be marked with their circuit designations with indelible tags. The functions of all instrumentation, switches, controls and other devices located on the front of the switchboard shall be marked with indelible tags.

The wiring within the switchboard shall be properly marked at each termination. A schematic of the switchboard shall be furnished and placed inside the access door.

240VAC and 120VAC power and lighting distribution panels shall be 3-phase, 3-wire and contain 2-pole or 3-pole molded case circuit breakers as required by the final circuit. Circuit breakers shall have a minimum of 10,000 AIC and be bolted or screwed in. The AC distribution panels shall be drip proof construction. Each panel shall have their respective circuits indelibly marked.

Each circuit breaker shall be indelibly marked with its circuit designation.

24VDC power distribution panels shall have a 2-wire bus and contain DC-rated 2-pole molded case circuit breakers.

The vessel shall be outfitted with electric lighting as shown on the Lighting Plan (Drawing 575-02-332).

Fluorescent lighting fixtures with 2x20W tubes shall be used for general lighting. Recessed fixtures shall be fitted in the accommodation areas, crew spaces and pilot house where linings and ceilings are installed. Watertight pendant lights shall be installed along the bulwarks and in select exterior locations. Fixture housings shall be drip-proof, of aluminum construction with baked white enamel finish. Fixtures shall have extruded aluminum frames and clip-in white translucent diffusers of high-impact acrylic.

Overhead fixtures in the pilot house shall have red lenses and be dimmable.

The overhead pendant light in the battery locker shall be explosion proof.

Watertight, surface mounted, fluorescent lighting fixtures with 2x20W tubes shall be fitted in machinery spaces and overhead on the vehicle deck. Where appropriate, watertight, 13 W, compact fluorescent fixtures shall be used. Fixtures shall be of heavy gage aluminum construction with extruded aluminum frames, neoprene gaskets, and clear acrylic lenses.

Supplementary illumination of the vehicle decks shall be achieved with 500W quartz/halogen floodlights located at 02 deck and directed down onto the open deck areas. Fixtures shall be of aluminum construction with specularized anodized aluminum reflectors. Lenses shall be of tempered glass with silicone rubber gaskets.

All lighting fixtures shall comply with applicable US Coast Guard regulations and be U.L. 595 Marine Listed.

Lighting throughout the ship shall be arranged in three groups:

- Normal lighting, which shall receive its power supply from the main switchboard.
- Emergency lighting, which shall receive its power supply from the emergency switchboard.
- Temporary emergency lighting, which shall receive its power supply from the emergency switchboard but shall also be battery maintained.

Temporary emergency lighting fixtures shall each have a built in battery that powers the fixture after loss of AC supply for a minimum 30 minutes. Temporary emergency lighting fixtures shall be located close to exits, stairwells and essential safety equipment.

Normal lighting shall be controlled by lighting panels in the engine room and in the pilot house. Lights in washrooms shall further be operated by local switches. Emergency lighting shall be controlled by a lighting panel in the pilot house.

Exterior lights and floodlights shall be controlled from lighting panels located on the pilot house console.

Other lights will have switches, either in close proximity to the controlled light or from light switches located on the console in the pilot house.

40.0 ALARM AND MONITORING SYSTEM

An alarm panel with visual and audible indication shall be provided for monitoring various pressure, temperatures and levels throughout the vessel. The alarm panel will provide an alarm indication for each monitored point and will hold the alarm until the condition is repaired. The visual indication will be a flashing red light on the alarm panel and a rotating amber beacon located in the engine room, each AMR, the bow thruster room and the steering gear room. Audible indication will be a bell or buzzer in the MCB and a siren located in the engine room, each AMR, the bow thruster room and the steering gear room.

The alarms will be broken into distinct alarm groups; flooding, propulsion, fire, engineer's emergency and machinery. These alarm groups will be mimicked by panels located in the crew space and in the pilot house. The alarm panel will receive alarm inputs from the main and auxiliary engine controls. In each instance, the alarm panel will notify the operator of trouble with the particular piece of equipment. The alarm panel will also monitor the voltage and the state of the main bus, emergency bus and each 24 VDC power supply and bus.

The alarm panel will be driven by a 24 VDC source from the DC-2 distribution panel.

Level alarm switches shall be provided for the tanks and the bilge wells. Each compartment below deck will have a bilge level float switch will activate a bilge alarm if flooded. Each tank will have a high level float switch that will activate a high tank level alarm indication.

The alarm panel shall meet the requirements of CFR 46 subchapter H and the ABS Rules for Building and Classing Steel Ships Less Than 295 Feet.

41.0 INTERNAL COMMUNICATIONS

An internal communications system shall be furnished that meets the requirements of CFR 46 subchapter. The system shall consist of a multichannel PA system, general alarm system, closed circuit TV system and sound powered phone system.

The PA system shall be capable of provided voice messages throughout the vessel. The PA system will have the number of speaker circuits to provide voice messages to the machinery spaces, passenger spaces, car deck and emergency muster stations.

The components for the PA system shall be selected for the locations in which they are placed.

The general alarm system will provide audible and visual alarms throughout the vessel. The contactors to activate the general alarm shall be located in the pilot house and in the MCB. Each general alarm shall consist of an 8” bell with a sound rating dependent upon the space it is located in and in accordance with CFR 46 subchapter H. Red beacons shall also be furnished to provide visual indication when the general alarm is activated.

A sound powered phone system shall be provided to permit communication between the pilot house and normal vessel operating and emergency stations. There shall be one system that permits communications between the pilot house, normal deck stations, engine room, steering gear room, bow thruster room and muster stations. Visual and audible devices will be provided at each phone station. A blue beacon and bell shall be provided in spaces with high noise levels such as the engine room.

A closed circuit TV system shall also be furnished so that the personnel in the pilot house can view passenger and car deck areas while underway.

42.0 ELECTRONICS

All electronics shall be from the same manufacturer to ensure compatibility between units. The final selection of type and quantity of equipment is to be determined by the Owner.

The pilot house shall be outfitted with the following electronics:

| | |
|------------|--------------------|
| GPS | Two (2) VHF Radios |
| Two Radars | Depth Sounder |

| | |
|---------------|-----------|
| Gyro Compass | Autopilot |
| Chart Plotter | |

Attachment A: Permissible Unfairness in Steel Welded Structure



