STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH, N. C.

PROPOSAL FORM

NAME OF BIDDER

ADDRESS OF BIDDER

DATE AND TIME OF OPENING BIDS 2:00 PM FEBRUARY 15, 2005

PROJECT NO. WBS 34132.1.6

TIP NO. F-4404C

VESSEL CLASS HATTERAS/VOITH SCHNEIDER VESSEL NAME N/A

DESCRIPTION CONSTRUCTION of One (1) 180' X 44' X 11' PASSENGER/VEHICLE FERRY WITH VOITH SCHNEIDER PROPULSION UNITS

TYPE OF WORK NEW CONSTRUCTION

Bids Will Be Received As Shown:

NEW CONSTRUCTION: X

REPAIR: _____

5% BID BOND REQUIRED, SECURED BY EITHER A CORPORATE SURETY OR CERTIFIED CHECK.

Proposal for the construction of Project WBS 34132.1.6 Funding in DARE County, North Carolina

Date January 18, 2005

Department of Transportation,

Raleigh, North Carolina

The Bidder has carefully examined the specifications and plans of the proposed work to be known as Project WBS 34132.1.6, which are acknowledged to be part of the proposal, the special provisions, the proposal, the form of contract, and the forms of contract payment bond and contract performance bond; and thoroughly understands the stipulations, requirements and provisions. The undersigned Bidder further agrees to provide all necessary machinery, tools, labor, and other means of construction; and to do all the work and to furnish all materials, except as otherwise noted, necessary to perform and complete the said contract by March 31, 2006 and in accordance with the requirements of the Engineer, and at the unit or lump sum prices, as the case may be, for the various items given on the sheets contained herein.

The Bidder shall provide and furnish all the materials, machinery, implements, appliances and tools, and perform the work and required labor to construct and complete State Highway Project WBS 34132.1.6 for Dare County, for the unit or lump sum prices, as the case may be, bid by the Bidder in his bid and according to the proposal, plans, and specifications prepared by said Department, which proposal, plans, and specifications show the details covering this project, and hereby become a part of this contract.

If the proposal is accepted and the award is made, the contract is valid only when signed either by the Contract Officer or such other person as may be designated by the Secretary to sign for the Department of Transportation. The conditions and provisions herein cannot be changed except over the signature of the said Contract Officer.

Accompanying this bid is a bid bond secured by a corporate surety, or certified check payable to the order of the Department of Transportation, for five percent of the total bid price, which deposit is to be forfeited as liquidated damages in case this bid is accepted and the Bidder shall fail to provide the required payment and performance bonds with the Department of Transportation, under the condition of this proposal, within 14 days after the written notice of award is received by him, as provided in the Standard Specifications; otherwise said deposit will be returned to the Bidder.

CONTENTS

* Includes special provisions and miscellaneous standard insert sheets, some of which are not numbered.

** Consists of itemized proposal sheets which are numbered by the sheet.

June 17,1982

WBS 34132.1.6

SPECIAL PROVISIONS

EXECUTIONS OF SIGNATURE SHEET

The Bidder's attention is directed to the various sheets in the proposal form which are to be signed by the Bidder. A list of these sheets is shown below. The signature sheets are located behind the item sheets in the proposal form. The bid bond is inserted in the proposal form.

1. Applicable Signature Sheets: 1, 2, 3, 4, or 5 (Bid)

2. Bid Bond (Proposal Insert)

WBS 34132.1.6

PROJECT SPECIAL PROVISIONS

SCHEDULE OF ESTIMATED COMPLETION PROGRESS

The Contractor's attention is directed to the Standard Special Provision entitled "Availability of Funds - Termination of Contracts" included elsewhere in this proposal form. The Department of Transportation's schedule of estimated completion progress for the project as required by that Standard Special Provision is as follows:

FISCAL YEAR	PROGRESS (DOLLAR VALUE)
2005 7-1-04 - 6-30-05	50% of Total Amount Bid
2006 7-1-05 - 6-30-06	50% of Total Amount Bid

The Contractor shall also furnish his own progress schedule in accordance with Article 1.7-2 of the Standard Specifications. Any acceleration of the progress as shown by the Contractor's progress schedule over the progress as shown above shall be subject to the approval of the Engineer.

January 1, 2002

STANDARD SPECIAL PROVISION

AVAILABILITY OF FUNDS - TERMINATION OF CONTRACTS

In accordance with G.S. 143-28.1 (6), Subsection (5) of G.S. 143-28.1 is hereby incorporated verbatim in this contract. G.S. 143-28.1(5) is as follows:

"(5). Amounts Obligated - Payments subject to the Availability of Funds - Termination of Contracts. Highway maintenance and construction appropriations may be obligated in the amount of allotments made to the Department of Transportation by the Office of State Budget and Management for the estimated payments for maintenance and construction contract work to be performed in the appropriation fiscal year. The allotments shall be multi-year allotments and shall be based on estimated revenues and shall be subject to the maximum contract authority contained in subdivision (2) above. Payment for highway maintenance and construction work performed pursuant to contract in any fiscal year other than the current fiscal year will be subject to appropriations by the General Assembly. Highway maintenance and construction contracts shall contain a schedule of estimated completion progress and any acceleration of this progress shall be subject to the approval of the Department of Transportation provided funds are available. The State reserves the right to terminate or suspend any highway maintenance or construction contract and any highway maintenance or construction contract shall be so terminated or suspended if funds will not be available for payment of the work to be performed during that fiscal year pursuant to the contract. In the event of termination of any contract, the contractor shall be given a written notice of termination at least 60 days before completion of schedule work for which funds are available. In the event of termination, the contractor shall be paid for the work already performed in accordance with the contract specifications".

Payment will be made on any contract terminated pursuant to the special provision in accordance with Article 108-13, Item 5, of the North Carolina Department of Transportation Standard Specifications for Roads and Structures, dated January 1, 2002.

April 19, 1994

PROJECT SPECIAL PROVISION

DOMESTIC STEEL AND IRON PRODUCTS

The requirements of this provision do NOT apply to certain ferry boat equipment and machinery items. These items include marine diesel engines, propulsion units, electrical switchboards and switchgear, electrical motors, pumps, ventilation fans, boilers, electrical controls and electronic equipment. The use of these specific equipment and machinery items, which have been manufactured outside the United States, is permitted for ferry boat construction.

Except as provided in the above paragraph, all steel and iron products which are permanently incorporated into this project shall be produced in the United States. Minimal amounts of foreign steel and iron products may be used provided the combined project cost of the bid items involved does not exceed one-tenth of one percent (0.1 percent) of the total amount bid for the entire project or $2,500.00, whichever is greater. This minimal amount of foreign produced steel and iron products permitted for use by this Special Provision is not applicable to fasteners. Domestically produced fasteners are required for this project.

All steel and iron products furnished as "domestic products" shall be melted, cast, formed, shaped, drawn, extruded, forged, fabricated, produced or otherwise processed and manufactured in the United States. Raw material used in manufacturing "domestic" steel and iron products may be imported; however, all manufacturing processes to produce the products, including coatings, must occur in the United States.

Before each steel or iron product is incorporated into this project or included for partial payment on a monthly estimate, the contractor shall furnish the Resident Engineer a notarized certification certifying that the product conforms to above requirements of this Special Provision. The Resident Engineer will forward a copy of each certification to Materials and Test Unit, if applicable.

Each purchase order issued by the contractor or subcontractor for steel and iron products to be permanently incorporated into this project shall contain in bold print a statement advising the supplier that all manufacturing processes to produce the steel or iron shall have occurred in the United States. The Contractor and all affected subcontractors shall maintain a separate file for steel and iron products permanently incorporated into this project so that verification of the Contractor's efforts to purchase "domestic" steel and iron products can be readily verified by an authorized representative of the Department or the Federal Highway Administration.

MINORITY AND WOMEN BUSINESSES: **6-15-93$_R$**

POLICY

It is the policy of the North Carolina Department of Transportation that Minority and Women Businesses shall have the maximum opportunity to participate in the performance of contracts financed by Non-Federal funds.

The Contractor is also encouraged to give every opportunity to allow MBE/WBE participation in Supplemental Agreements.

OBLIGATION

The Contractor and any subsequent Subcontractor shall ensure that Minority and Women Businesses have the maximum opportunity to participate in the performance of the work included in this contract. The Contractor shall take all necessary and reasonable steps to ensure that minority and women businesses have the maximum opportunity to compete for and perform a portion of the work included in this contract. Failure on the part of the Contractor to carry out the requirements set forth herein shall constitute a breach of contract and after proper notification, may result in award disqualification, termination of the contract, disqualification from bidding, or other appropriate remedy.

GOALS

Due to the nature of work in this contract, specific goals for participation by minority and women businesses are not established.

REPORTING MINORITY BUSINESS ENTERPRISE OR WOMEN BUSINESS ENTERPRISE PARTICIPATION

When payments are made to Minority Business Enterprise firms or Women Business Enterprise firms, including material suppliers, contractors at all levels (prime, subcontractor, or second tier subcontractor) shall provide the Engineer with an accounting of said payments. This accounting shall be furnished the Engineer for any given month by the end of the following month. Failure to submit this information accordingly may result in (1) withholding of money due in the next partial pay estimate; or (2) removal of an approved Contractor from the prequalified bidders list or the removal of other entities from the approved subcontractors list. The accounting shall list for each payment made to a MB/WB Enterprise firm the following:

DOT Project Number
Payee Contractor Name
Receiving Contractor or Material Supplier
MB/WB Certification Basis, e.g., Woman Owned, Native American, African American, etc.
Amount of Payment
Date of Payment

A responsible fiscal officer of the payee contractor, subcontractor, or second tier subcontractor who can attest to the date and amounts of the payments shall certify that the accounting is correct. A copy of an acceptable report may be obtained from the Engineer.

SP1G70

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RALEIGH, NORTH CAROLINA

SPECIFICATIONS FOR CONSTRUCTION

OF

ONE (1) 180' PASSENGER/VEHICLE FERRY
VOITH SCHNEIDER PROPULSION UNITS

FEBRUARY 15, 2005

PREPARED BY:

FERRY DIVISION

MARINE ENGINEERING

MOREHEAD CITY, NORTH CAROLINA

PROJECT NO. WBS 34132.1.6

TIP NO. F4404C

180' DOUBLE-ENDED VEHICLE/PASSENGER FERRY

CONSTRUCTION SPECIFICATIONS

PROJECT WBS 34132.1.6, TIP F4404C

BASIC HULL PARTICULARS:

Length (L.O.A.) . . . . . 180'-0"

Breadth (Molded). . . . . .. 44'-0"

Breadth (Max. at MN DK) . . . . . 44'-0"

Main Deck (Camber). . . . . 0'-6"

Depth (Amidships) . . . . . 11'-0"

Draft (Design). . . . . 5'-6"

Engine (Main Propulsion). 2

Propellers . . . . . 2 (Voith Schneider Propellers)

Gross Tonnage . . . . . 460 LT.(approximate)

BRIEF DESCRIPTION

This vessel is a steel hull, double-ended, vehicle/passenger ferry. All spaces below main deck are voids with the exception of the engine room, sanitation machinery, fuel tanks and propulsion compartments.

The Main Deck will have a parabolic curve. The Toilets, Emergency Generator, and Engine Room Access will be located off the centerline on Main Deck. Passenger Lounge, and Open Deck is located on the Upper Deck. The Pilot House is located on centerline above Passenger Spaces on Bridge Deck.

COAST GUARD INSPECTION FOR PASSENGER VESSELS FOR HIRE MORE THAN 100 GROSS TONS (SUB-CHAPTER "H") IS REQUIRED.

SERVICE IS LAKES, BAYS AND SOUNDS, PARTIALLY PROTECTED WATERS

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SECTION I

CONSTRUCTION SPECIFICATIONS

PROJECT WBS 34132.1.6

1.0 GENERAL REQUIREMENTS

1.1 DEFINITIONS

Wherever the words defined in this paragraph or pronouns used in their stead occur in these specifications, they shall have the meanings here given.

(a) The term "Owner" means the North Carolina Department of Transportation, and shall include its authorized Representatives and Inspectors.

(b) The term "Contractor" means the person, firm or corporation named as such in the contract and includes the plural number and the feminine gender when such are named in the contract as the contractor.

(c) The term "Subcontractor" means an individual, partnership, firm, joint venture, or Corporation to whom the Contractor, with written consent of the Inspector, sublets any part of the contract.

(d) The word "Vendor" shall be taken to mean suppliers and/or manufacturers of materials and equipment purchased by the Contractor for use in the work covered by these specifications.

(e) Coast Guard Inspector means Officer in Charge of Marine Inspection having cognizance over the certification of the vessel, where applicable, and includes Inspection Officers under his command.

(f) The words "approval of the Owners" or "approved" shall mean an approval in writing signed by the owners, and shall also mean approval by the cognizant U. S. Coast Guard, section or office where applicable.

(g) The words "furnish", "provide" and "install" shall be taken to mean that the Contractor shall provide and install the specified material or equipment with necessary fittings, foundations, piping, electrical wiring and fixtures, etc., and make necessary hook-up and connections even though one of the words only is used, unless it is specifically stated otherwise.

(h) The term "work" of the Contractor or subcontractor includes labor or materials or both unless specifically stated otherwise herein.

(i) The words "renew" or "replace" shall be taken to mean that the existing material or item referred to shall be removed and disposed of as directed, and other material or items installed in place of the same as in subparagraph (h) above.

(j) The word "reinstall" shall mean that existing material shall be reused in either its original or a new location, and completely installed as in subparagraph (h) above.

(k) The term "Notice" as used herein shall include all written notices, demands, instructions, claims, approvals, and disapprovals, required to obtain compliance with Contract requirements. Any written notice by either party to the Contract shall be considered sufficiently given if delivered to the other party, agent, representative or officer in person. The person to whom the notice is delivered shall sign the duplicate copy and return the same to the other party immediately after receipt.

(l) The words "or equal" shall be taken to mean of equal quality, size, capacity, general configuration and suitability for the use intended, as the item or items set out. Where reference is made to "trade names" or "catalogs", the reference is descriptive and restrictive unless stated otherwise by adding "or equal".

(m) The words "best Marine quality" or "first-class material" shall be taken to mean the top grade product of an approved marine manufacturer.

(n) The words "first class workmanship" shall be taken to mean the level of quality that would be done by a capable marine mechanic experienced in construction and outfitting of passenger vessels, using proper tools in good condition and in accordance with normally accepted good shipbuilding practice.

(o) All "tons" used herein are 2,240 pounds each.

(p) The term "Act of God" as used herein is defined as an unusual and extraordinary manifestation of the forces of nature, that could not under normal conditions have been anticipated or expected. It includes a tornado, a hurricane, lightning, and fires caused by lightning, but it does not include strikes, or other work stoppages, rain not accompanied by a hurricane, fire not caused by lightning or hot or cold temperatures.

(q) The "Chief Engineer" means Chief Engineer of Operations Division of Highways, North Carolina Department of Transportation.

(r) "Division of Highways" means the division of the Department of Transportation which, under the direction of the Secretary of Transportation, carries out state highway planning, construction, and maintenance functions assigned to the Department of Transportation.

(s) The "Engineer" means the Chief Engineer of Operations, Division of Highways, North Carolina Department of Transportation, acting directly or through his duly authorized representatives.

(t) The "Inspector" means the authorized representative of the Engineer assigned to make a detailed inspection of any or all portions of the work and materials.

(u) "Department" or "Department of Transportation" means a principal department of the Executive Branch which performs the function of planning, construction, and maintenance of an integrated statewide transportation system.

1.2 BIDDING REQUIREMENTS AND CONDITIONS

1.2-1 INVITATION TO BID

After the advertisement has been made, an invitation to bid will be mailed to known qualified Contractors informing them that bids will be received for the construction of a specific project. Such invitation will indicate the project number, length, locations, and general descriptions; a general summary of the items and approximate quantities of work to be performed; and the time and place for the public opening and reading of bids received. Information concerning the cost of and the availability of plans and proposal forms will also be indicated in the invitation to bid.

1.2-2 PREQUALIFYING TO BID

Prospective Bidders shall prequalify with the Department. The requirements for prequalification will be furnished each prospective Bidder by the Contractual Services Unit, Raleigh, NC (919-733-7174). All required statements and documents shall be filed with the Contractual Services Unit by the prospective Bidder at least two (2) weeks prior to the date of

opening of bids. A bid will not be opened unless all prequalification requirements have been met by the bidder and have been found to be acceptable by the Contractual Services Unit.

1.2-3 CONTENTS OF PROPOSAL FORMS

A proposal form will be furnished by the Department upon request. Each proposal form will be marked on the front cover by the Department with the name of the firm or individual to whom it is being furnished. It will set forth the date and time for the opening of bids. The form will include any requirements which vary from or are not contained in the plans. It will also include a bid sheet on which the Contractor shall place his lump sum bid for the project. All papers bound with the proposal form are necessary parts thereof and shall not be detached, taken apart, or altered.

The plans, specifications and other documents designated in the proposal form shall be considered a part of the proposal form whether attached or not. The prospective Bidder will be required to pay the Department of Transportation the sum stated in the invitation to bid for each copy of the proposal form and each set of plans requested.

1.2-4 EXAMINATION OF PLANS AND SPECIFICATIONS

The Bidder shall carefully examine the proposal form, plans and specifications, before submitting a bid. It is mutually agreed that submission of a bid shall be considered prima-facie evidence that the Bidder has made such examinations and is reasonably satisfied as to the conditions to be encountered in performing the work, and as to the requirements of the proposal form and contract.

1.2-5 PREPARATION AND SUBMISSION OF BIDS

All bids shall be prepared and submitted in accordance with the following listed requirements:

1. THE PROPOSAL FORM FURNISHED BY THE DEPARTMENT SHALL BE USED AND SHALL NOT BE TAKEN APART OR ALTERED. The bid shall be submitted on the same proposal form which has been furnished to Bidder by the Department, as identified by the Bidder's name marked on the front cover by the Department.

2. All entries including signatures shall be written in ink.

3. The Bidder shall submit a unit or lump sum price for every item in the proposal form other than items which are authorized alternates to those items for which a bid price has been submitted.

4. The total amount bid shall be written in figures in the proper place in the proposal form.

5. Changes in any entry shall be made by marking through the entry in ink and making the correct entry adjacent thereto in ink. A representative of the bidder shall initial the change in ink.

6. The bid shall be properly executed. In order to constitute proper execution, the bid shall be executed in strict compliance with the following:

a. If a bid is by an individual, it shall show the name of the individual and shall be signed by the individual with the word "Individually" appearing under the signature. If the individual operates under a firm name, the bid shall be signed in the name of the individual doing business under the firm name.

b. If the bid is by a corporation, it shall be executed in the name of the corporation by the President or Vice President. It shall be attested by the Secretary or Assistant Secretary. The seal of the corporation shall be affixed. If the bid is executed on behalf of a corporation in any other manner than as above, a certified copy of the minutes of the Board of Directors of said corporation authorizing the manner and style of execution and the authority of the person executing shall be attached to the bid or shall be on file with the Department.

c. If the bid is made by a partnership, it shall be executed in the name of the partnership by one of the partners.

d. If the bid is a joint venture, it shall be executed by each of the joint venturers in the appropriate manner set out above. In addition, the execution by the joint venturers shall appear below their names.

7. The bid shall not contain any unauthorized additions, deletions, or conditional bids.

8. The Bidder shall not add any provision reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.

9. The bid shall be accompanied by a bid bond on the form furnished by the Department or a bid deposit. The bid bond shall be completely and properly executed in accordance with the requirements of Section 1.2-6. The bid deposit shall be a certified check or cashiers check in accordance with Section 1.2-6.

10. The bid shall be placed in a sealed envelope and shall have been delivered and received by the Department prior to the time specified in the invitation to bid.

1.2-6 BID BOND OR BID DEPOSIT

Each bid shall be accompanied by a corporate bid bond or a bid deposit of a certified or cashiers check in the amount of at least 5% of the total amount bid for the contract. No bid will be considered or accepted unless accompanied by one of the foregoing securities. The bid bond shall be executed by a Corporate Surety licensed to do business in North Carolina and the certified check or cashiers check shall be drawn on a bank or trust company insured by the Federal Deposit Insurance Corporation and made payable to the Department of Transportation in an amount of at least 5% of the total amount bid for the contract. The condition of the bid bond or bid deposit is: the Principal shall not withdraw its bid within 60 days after the opening of the same, and if the Board of Transportation shall award a contract to the Principal, the Principal shall within 14 calendar days after the notice of award is received by him give payment and performance bonds with good and sufficient surety as required for the faithful performance of the contract and for the protection of all persons supplying labor and materials in the prosecution of the work; in the event of the failure of the Principal to give such payment and performance bonds as required, then the amount of the bid bond shall be immediately paid to the Department as liquidated damages or, in the case of a bid deposit, the deposit shall be forfeited to the Department.

When a bid is secured by a bid bond, the bond shall be on the form furnished by the Department. The bid bond shall be executed by both the Bidders and a Corporate Surety licensed under the laws of North Carolina to write such bonds.

The execution by the Bidder shall be in the same manner as required by Section 1.2-5 for

the proper execution of the bid. The execution by the Corporate Surety shall be the same as is provided for by Section 1.2-5, Item 6b, for the execution of the bid. The seal of the Corporate Surety shall be affixed to the bid bond. The bid bond form furnished is for execution of the Corporate Surety by a General Agent or Attorney in Fact. A certified copy of the Power of Attorney shall be attached if the bid bond is executed by a General Agent or Attorney in Fact. The Power of Attorney shall contain a certification that the Power of Attorney is still in full force and effect as of the date of execution of the bid bond by the General Agent or Attorney in Fact. If the bid bond is executed by the Corporate Surety by the President or Vice President, and attested to by the Secretary or Assistant Secretary, then the bid bond form furnished shall be modified for such execution, instead of execution by the Attorney in Fact or the General Agent.

When a bid is secured by a bid deposit (certified check or cashiers check), the execution of a bid bond will not be required.

1.2-7 DELIVERY OF BIDS

All bids shall be placed in a sealed envelope having the name and address of the Bidder, and the statement **"Bid for the Construction of State Highway Project No.WBS 34132.1.6 in DARE County"** on the outside of the envelope.

If delivered prior to the Bid Date, Bids may be delivered in person or by USPS, Federal Express, etc. to the Contract Officer, Randy Garrish, PE., at:

Design Services Unit
Century Center 2 (Delivery)
1020 Birch Ridge Drive
Raleigh, NC 27610
Attention: Contract Officer
(919) 250-4124

If delivered on the day the Bids are to be received, sealed envelopes shall be delivered in person to the Century Center OR may be received by UPS, Fedex, Etc. at:

Design Services Unit
Century Center 2 (Delivery)
1020 Birch Ridge Drive
Raleigh, NC 27610
Attention: Contract Officer
(919) 250-4124

The outer envelop shall also bear the statement **"Bid for the Construction of State Highway Project No. WBS 34132.1.6"**

If delivered in person to the Contract Officer, bids shall have been received prior to **2:00 pm** on the day of the bid opening. If delivered by mail, bids shall have been received prior to **2:00 pm** on the day of the bid opening. Bids received after the times specified above **will NOT** be accepted and will be returned to the Bidder unopened.

1.2-8 WITHDRAWAL OR REVISION OF BIDS

A Bidder may, without prejudice to himself, withdraw a bid after it has been delivered to the Department of Transportation, provided the request for such withdrawal is either in writing or by telegram to the Chief Engineer of Operations or the Engineer presiding over the public opening of bids before the date and time set for the opening of bids. The Bidder may then submit a revised bid provided it is received prior to the time set for opening of bids.

Only those persons authorized to sign bids under the pro- visions of Article 1.2-5, Item 6 shall be recognized as being qualified to withdraw a bid.

1.2-9 RECEIPT AND OPENING OF BIDS AND NON-COLLUSION AFFIDAVIT

(a) RECEIPT AND OPENING OF BIDS

Bids will be opened and read publicly at the time and place indicated in the invitation to bid. Bidders, their authorized agents, and other interested parties are invited to be present.

A bid will be received and opened from any Bidder who:

1. Is prequalified in accordance with the provisions of Article 1.2-2, and

2. Has delivered the bid to the place indicated in the Specifications prior to the time indicated in the invitation to bid.

A bid received from a Bidder who has not complied with the above requirements will be returned to the Bidder unopened and under no circumstances will be considered for award.

(b) NON-COLLUSION AFFIDAVIT

In compliance with Section 112(c) of Title 23 USC. and current regulations of the Department, each and every Bidder will be required to furnish the Department with an affidavit certifying that the Bidder has not entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with his bid on the project. Affidavit will be included in the proposal form as part of the Signature sheets. Execution of Signature sheets will also constitute execution of Non-Collusion Affidavit. Signature sheets shall be notarized.

1.2-10 REJECTION OF BIDS

Any bid submitted which fails to comply with any of the requirements of Articles 1.2-5, 1.2-6 and 1.2-7 shall be considered irregular and may be rejected, except that any bid which fails to comply with Section 1.2-5, Item 3 shall be considered irregular and will be rejected.

In addition to the above, any bids submitted by any Bidder who has failed to comply with the following requirement will be rejected.

Any bid submitted by a Bidder who at the time of the submission is bankrupt, insolvent, or has committed an act of bankruptcy or financially unable to meet its outstanding obligations, shall be considered irregular and will be rejected.

Any Bidder who has been disqualified from bidding shall have been requalified prior to the time set for receiving bids. The right to reject any and all bids shall be reserved to the Board.

1.2-11 DISQUALIFICATION OF BIDDERS

Any one of the following causes may be justification for disqualifying a Contractor from further bidding until he has applied for and has been requalified in accordance with Article 1.2-2:

1. Unsatisfactory progress in accordance with Section 1.7.
2. Being declared in default in accordance with Section 1.32.
3. Uncompleted contracts which, in the judgement of the Chief Engineer of Operations, might hinder or prevent the prompt completion of additional work if awarded.
4. Failure to comply with prequalification requirements.
5. The submission of more than one bid for the same work from an individual, partnership, joint venture, or corporation under the same or different names.
6. Evidence of collusion among Bidders. Each participant in such collusion will be disqualified.
7. Failure to furnish a non-collusion affidavit upon request

1.3 AWARD AND EXECUTION OF CONTRACT

1.3-1 CONSIDERATION OF BIDS

After the bids are opened and read, the amount bid for each item and the total bid will be checked and made known to the public.

The right is reserved to reject any or all bids, to waive technicalities, to request the low bidder to submit an up-to-date financial and operating statement, to advertise for new bids, or to proceed to do the work otherwise, if in the judgment of the Board, the best interests of the State will be promoted thereby.

1.3-2 AWARD OF CONTRACT

The award of the contract, if it be awarded, will be made by the Board of Transportation to the lowest responsible Bidder whose bid complies with all the requirements prescribed. The lowest responsible Bidder will be notified by letter mailed to the post office address shown on his bid that his bid has been accepted and that he has been awarded the contract. This letter shall constitute the notice of award. The notice of award, if the award be made, will be issued within sixty days after the opening of bids, except that with the consent of the successful Bidder the decision to award the contract to such Bidder may be delayed for as long a time as may be agreed upon by the Department of Transportation and such Bidder. In the absence of such agreement, the lowest responsible Bidder may withdraw his bid at the expiration of the 60 days without penalty if notice has not been issued.

1.3-3 CANCELLATION OF AWARD

The Board of Transportation reserves the right to rescind the award of any contract at any time before the receipt of the properly executed contract and contract bonds from the successful Bidder.

1.3-4 RETURN OF BID BOND OR BID DEPOSIT

All bid bonds will be retained by the Department until the contract is executed by the successful Bidder, after which all such bid bonds will be destroyed unless the individual bid bond form contains a note requesting that it be returned to the Bidder or the Surety.

Checks which have been furnished as a bid deposit by all Bidders other than the three (3) lowest responsible Bidders will be retained not more than ten (10) days after the date of opening of bids. After the expiration of such period, Department of Transportation warrants in the equivalent amount of checks which were furnished as a bid deposit will be issued to all Bidders other than the three (3) lowest responsible Bidders.

Checks which have been furnished as a bid deposit by the three (3) lowest responsible Bidders will be retained until after the contract bonds have been furnished by the successful Bidder, at which time Department of Transportation warrants in the equivalent amount of checks which were furnished as a bid deposit will be issued to the three (3) lowest responsible Bidders.

1.3-5 CONTRACT BONDS

The successful Bidder, within 14 calendar days after the notice of award is received by him, shall provide the Department with a contract payment bond and contract performance bond each in an amount equal to 100 percent of the amount of the contract.

All bonds shall be in conformance with GS44A-33. The Corporate Surety furnishing the bonds shall be authorized to do business in the State.

1.3-6 EXECUTION OF CONTRACT

As soon as possible following receipt of the properly executed contract bonds, the Department will complete the execution of the contract, retain the original contract and return one certified copy of the contract to the Contractor.

1.3-7 FAILURE TO EXECUTE CONTRACT

The successful Bidder's failure to file acceptable bonds within 14 calendar days after the notice of award is received by him shall be just cause for the forfeiture of the bid bond or bid deposit and rescinding the award of the contract. Award may then be made to the next lowest responsible Bidder or the work may be readvertised and accomplished under contract or otherwise, as the Board of Transportation may decide.

1.4 INTENT

(a) It is the intent of these specifications that the Contractor shall Build, Equip, Launch, Test and Deliver to the Owner one (1) vessel, as described, complete and ready for service in every respect as concerns the work covered herein. All specifications written for singular description shall be applicable for the construction of one (1) vessel. The Contractor shall provide the necessary plant, launch/railway and lay days to construct the vessel, all tools, materials, machinery, equipment, fittings and labor, including upkeep of the vessel until final acceptance by the Owner.

(b) The Contractor shall make removals and replacements as necessary to effect the work covered by these specifications as a part of the contract if required.

(c) The Contractor shall coat all new work and restore and recoat all areas disturbed due to the work required by these Specifications as a part of the Contract.

(d) Any work, equipment, machinery, or other part or parts of the vessel injured or damaged while the vessel is in the custody of the Contractor during the progress of the work covered by these specifications shall be repaired by the Contractor to the satisfaction of the Inspector, at no cost to the Owner.

(e) Any work or detail omitted from these specifications or plans, but necessary to complete the specified construction covered herein in accordance with good shipbuilding practice shall be furnished by the Contractor as a part of the Contract at no additional cost to the Owner, and nothing herein or on the plans shall be construed as meaning otherwise.

(f) Whereas the true intent and meaning is manifest, the Contractor shall not be relieved from fulfilling the full requirements of the contract plans, contract guidance plans and specifications, or of the responsibility for producing satisfactory results, or of properly performing any work by any of the following:

Absence of the details where the essential features, functions and arrangements are defined. Mistakes in description of hull or machinery details which, if not corrected, would interfere with the proper performance of the items involved.

The Contractor is responsible for proper performance of the Contract in accordance with the full manifested intent of these specifications despite any error, omission, discrepancy or lack of clarity in the plans or specifications which should reasonably have been apparent to an experienced Contractor upon a careful and critical review.

(g) The intent above given is of the essence of these specifications.

1.5 INSPECTION

(a) All work and materials entering into the construction of the vessel and its machinery, fittings and equipment shall be subject at all times to the inspection and approval of the Inspector and where applicable the U.S. Coast Guard.

(b) It is the duty of the Inspector to insist that the Contractor perform all work and supply all materials as called for in these specifications. The Contractor shall perform all work in a satisfactory manner. In the event that any work or materials fail to comply with these specifications the Inspector will notify the Contractor in writing of the deficiency or unsatisfactory work as soon as it comes to his attention.

(c) Any work not satisfactory, whether from defective material, departure from specifications, or poor workmanship, or any work performed in the absence of the Inspector and later found to be unsatisfactory, shall be removed and replaced promptly to the satisfaction of the Inspector, at the Contractor's expense.

(d) The Owners, the Inspector, the U. S. Coast Guard, and any person employed by the same shall be allowed access to the work at anytime during the regular working hours of the Contractor, or at such other times as will not entail additional expense to the Contractor, and the Contractor shall furnish all reasonable facilities and give ample time for such inspection.

A desk, desk chair, 4-drawer legal file cabinet with lock and keys, three (3) chairs, a 3' x 6' x 32" drawing board and compact copy machine similar to Sharp Model Z8511 shall be provided in a private office, and apart from facilities occupied by contractor's personnel. Office shall be for the Inspector's and Owner's sole use during the contract period. Office shall be provided with telephone service and telefax connection. Necessary long distance calls made to

discuss questions arising concerning the work shall be at the Contractor's expense. Telephone service shall be two private lines not subject to connection to contractor's telephone network listed in the Owners name. Contractor shall provide Internet service access as a part of this contract. Additional telephone service on contractor's system may be installed.

(e) The Inspector shall determine the amount, quality, acceptability, and witness all parts of the work. He shall interpret the specifications, Contract Documents and supplemental agreements, if any, and he shall decide all other questions in connection with the work. The Inspector shall have no authority to approve or order changes in the work which alter the terms or conditions of the Contract. The Inspector shall confirm in writing within five (5) days any oral order, direction, requirement, or determination. The decision of the Inspector shall be final and binding on both Contractor and Owner.

(f) Nothing herein shall be taken to relieve the Contractor of complete responsibility for unsatisfactory workmanship, faulty materials or other deficiencies of any kind whatsoever that are the result of his work, his sub-contractors work, or material purchased or provided and installed by him.

(g) The Inspector shall have general surveillance of the work. All orders and communications from the Contractor shall be transmitted through him. He shall have authority to stop the work whenever such stoppage may be necessary to ensure the proper execution of the contract, said stoppage is to be a Contractor caused delay in computing liquidated damages, if any, for late delivery.

(h) As the Inspector is, in the first instance, the interpreter of the conditions of the

contract and the judge of its performance, he shall use his powers under the contract to enforce its faithful performance.

(i) The Contractor shall notify the Inspector prior to any and all Contractor scheduled meetings or inspections relevant to this contract which involve any representative of the U.S. Coast Guard. The Inspector shall be given the opportunity, at his option, to be present on such occasions. At no time shall the Contractor allow access to any portion of this contract by personnel other than those employed by the Contractor without first receiving the Inspectors approval.

1.6 LAWS, PERMITS AND REGULATIONS

(a) The Contractor shall obtain and pay for all licenses and permits and shall pay for all fees and charges for connection to outside service and use of property other than the site of the work for storage of materials and other purposes.

(b) The Contractor shall comply with all laws, ordinances, and regulations applicable to the work unless in conflict with contract requirements. If the Contractor ascertains at any time that any requirements of this Contract are at variance with applicable laws, ordinances, or regulations he shall promptly notify the Inspector and Owner and any necessary adjustment of the Contract shall be made as specified under Changes in the work.

(c) Any questions arising under this contract shall be determined under the laws of the State of North Carolina.

(d) The Contractor shall furnish the Inspector copies of affidavits upon request giving the original dates, renewal dates and expiration dates of all labor contracts, if any, related to any phase of the work to be performed in the shipyard under this contract.

1.7 PROSECUTION OF WORK (LIQUIDATED DAMAGES)

(a) Date of completion is the essence of any contract resulting from these specifications and plans. The Contractor will be required to complete all work no later than the date stated in the contract.

(b) Should progress of the work lag or fall behind schedule, the Contractor shall direct sufficient additional labor to work, including overtime if required, to maintain the contract delivery date, at no additional cost to the Owner.

(c) The Contractor will be required to pay liquidated damages for each and every day that delivery is delayed beyond the contract date for its completion. The timely completion of the performance of this contract has a substantial financial value to the Owners, which value is difficult or impossible to forecast or evaluate exactly. It is, therefore, stipulated and agreed that the value to the Owners for each calendar day of delay in delivery of the vessel by the Contractor to the Owner beyond the contract completion date of the work to be performed by the Contractor under this contract shall be a fixed sum and shall be set in advance. Upon the foregoing consideration and for the purpose of this contract, the sum of One Thousand Dollars ($1,000.00) per day is hereby mutually agreed upon as the sum which the Contractor shall give to the Owner as liquidated damages for each calendar day delayed beyond the contract completion date that the work remains unfinished and said vessel remains undelivered.

(d) For the purpose of these specifications in determining the days for which liquidated damages will be charged the Contractor shall be entitled to an extension of the contract time or to an apportionment and remittance of liquidated damages when a contract is not completed within the contract time to the extent that delays to the current controlling operations, or operations,

were caused by acts of God as defined herein, or acts of the Board or its agents. The Contractor, however, shall be entitled to an extension of contract time, or an apportionment and remittance of liquidated damages, only to the extent and in the proportion that such delays were caused by acts of God or acts of the Board, and it is understood that the Board does not hereby waive or release any claim against the Contractor for liquidated damages when the contract is not completed within the contract time for any reason whatsoever other than the said acts of God or acts of the Board. A request by the Contractor for an extension of time shall be made to the Inspector within five (5) days after such delay has occurred and he shall make a determination as to the cause of the delay and the amount of time that the contract should be extended by reason of such delay.

(e) It is understood and agreed that if a claim is filed for an extension of contract time, or an apportionment and remittance of liquidated damages, the burden of proof shall be upon the Contractor to establish the acts of God or the acts of the Board causing the alleged delay; and if the Contractor fails to sustain the burden of proof, he shall not be entitled to an extension of contract time, or to an apportionment and remittance of liquidated damages. The burden of proof herein referred to shall be the same that in other cases of like nature exists. Proof by the Contractor of delays due to an act of God or act of the Board to enforce or collect liquidated damages due to any other reason whatsoever.

(f) The Contractor is hereby notified that no consideration will be given to requests for remissions of liquidated damages for any reason whatsoever, except as covered by Paragraph 1.7 (e) herein. The Contract date for completion will be changed on a negotiated basis for any work authorized or deleted by supplemental agreements to the original contract.

1.7-1 WORK PROGRESS

(a) It is the intent of these specifications that the Contractor shall commence work on the date of availability as noted elsewhere herein. The Contractor shall not begin work prior to the date of availability without written approval of the Inspector. If such approval is given and the Contractor does begin work prior to the date of availability, the Department will assume no responsibility for any delays caused prior to the date of availability by any reason whatsoever, and such delays, if any, will not constitute a valid reason for extending the completion date.

(b) The Contractor shall not perform any work on the project until the Department has received the properly executed contract and contract bonds.

(c) It is further the intent of these specifications that the Contractor shall pursue the work diligently with workmen in sufficient numbers, abilities, and supervision and with equipment, material, and method of construction as may be required to complete the work described in the contract, or as may be amended by the completion date.

1.7-2 PROGRESS SCHEDULE

(a) The Contractor shall prepare and submit for approval by the Inspector a schedule of his proposed working progress on the project.

(b) The proposed progress schedule shall be submitted no later than the date of the project preconstruction conference (Section 1.7-3) and before any work is begun on the project.

(c) When conditions beyond the Contractor's control have adversely affected his progress, the Contractor may submit a revised progress schedule to the Inspector for approval. Such revised progress schedules will not be approved unless accompanied by a detailed written statement giving the Contractor's reasons for the proposed revision.

(d) When, at any time during construction or repair of the project, the Contractor's progress deviates substantially from the latest approved progress schedule, the Inspector may request the Contractor to submit a revised progress schedule. Revised progress schedules requested by the Inspector shall be submitted within seven (7) days after the date of such request.

1.7-3 PRECONSTRUCTION CONFERENCE

(a) Immediately after receipt of notice of award, the Owner and the Contractor will establish a mutually agreeable date on which the preconstruction conference will be held. The Contractor's project superintendent and other individuals representing the Contractor who are knowledgeable of the Contractor's proposed progress schedule or who will be in charge of major items of the work shall attend the preconstruction conference. The Contractor shall provide necessary personnel to take, transcribe, correct, reproduce and distribute minutes of the pre-construction meeting.

1.7-4 CONSTRUCTION CONFERENCES

(a) After work on the project has begun, initially construction conferences shall be held monthly and adjusted to suit construction. The construction conferences are to be scheduled at times which are mutually agreeable to both the Contractor's project superintendent and the Inspector. It shall be the superintendent's responsibility to attend the conference. The Contractor may elect to have other members (See Section 1.7-3) of his staff attend construction conferences. The Contractor shall provide necessary personnel to take, transcribe, reproduce and distribute minutes of each meeting.

1.8 MATERIALS

(a) All materials intended for use, and all equipment used shall be new and as specified or as shown on plans except where Owner furnished (Paragraph 1.17). Should the Contractor desire to substitute any material or equipment for that specified he must first obtain an order from the Owner in writing. (See also paragraphs 1.5 and 1.11 herein.)

(b) It is the responsibility of the Contractor to furnish sufficient data and information on materials he wishes to substitute to allow the Owner to make a decision.

(c) All equipment, where required, shall be of U. S. Coast Guard approved type and manufacture, and details or plans shall be submitted for U. S. Coast Guard approval by the Contractor where required and not previously approved. (See Section 1.10 & 1.11 "Plans and Specifications").

(d) Steel plate, shapes and other metal work shall be of the best quality domestic steel products for its particular purpose. (See special provision "Domestic Steel Products" dated April 19, 1994.)

(e) Paints, electrical, piping, and all other materials shall conform to the standards of first class material for passenger vessels, as specified herein.

(f) All galvanizing shall be "hot dip" process.

(g) All plywood shall be waterproof marine type in all cases, with all edges sealed before installation, but after cutting to shape.

(h) Two (2) copies of each purchase order for all materials, articles, and equipment purchased by the Contractor and his Subcontractors shall be furnished to the Inspector at the time of issue to the vendor.

Purchase orders shall show unit and total price of materials, articles and equipment purchased and vendors and Subcontractors complete address.

(i) Materials requiring specified approval, which are ordered by the Contractor before approval, shall be entirely at the risk of the Contractor.

(j) Where material herein specified is not available on the present market, alternate materials of equal quality at no additional cost may be processed for approval of the Inspector by the Contractor.

(k) Any material or equipment provided by the Contractor which proves defective and unfit for service either before or after installation and whether previously approved or not shall be replaced by the Contractor with satisfactory items without additional cost to the Owner.

1.9 WORKMANSHIP

(a) Workmanship throughout shall be first class and high grade in all respects for passenger vessels. Particular care shall be taken to insure fair lines, adequate and proper fastening, suitable butts and scarfs, smooth surfaces, neat and substantial work, and the maximum degree of watertightness. All welding shall be done by competent USCG/ABS certified welders. **All plating shall be free of uneven and wavy lines or wrinkles after welding. (See paragraph 1.27 herein also).**

(b) The work shall be executed by competent workmen, in each trade, experienced in marine construction, and under adequate supervision to assure first class workmanship throughout.

(c) Ragged edges or sharp projections which are hazardous to operating personnel, contribute to additional maintenance, or detract from the finished appearance shall be eliminated.

(d) Dimensional tolerances, fit alignment, fairness and finish shall be in accordance with approved working plans. Where tolerances are not given on working drawings or specified elsewhere, a standard of plus or minus 1/64 of an inch will be assumed for unmachined fits. Machined fits shall be in accordance with S.A.E. Standards for tolerance and finish.

(e) Fittings at openings through decks and bulkheads for pipes, cables, etc., shall be properly designed to maintain watertight integrity, reduce transmission of heat and eliminate transfer of machinery vibration and noise to the hull structure. Doubler plates or other suitable strengthening shall be fitted at all bulkhead and hull penetrations.

(f) Piping and cables shall be run as far inboard and shall pierce the bulkheads as close under the decks and as near the top of the bulkheads as practicable.

1.9-1 ON SITE PROJECT SUPERVISION

(a) At all times that work is actually being performed, the Contractor shall have present on the project one competent individual who has been authorized to act in a supervisory capacity over all work on the project including work subcontracted. This individual who has been so authorized shall be experienced in the type of work being performed and is to be fully capable of managing, directing and coordinating the work; of reading and thoroughly understanding the contract; and of receiving and carrying out directions from the Inspector. He shall be an employee of the Contractor.

(b) The project Supervisor shall be authorized to accept and sign for notices and instructions, if and when found necessary, from the Inspector.

(c) The Project Supervisor shall be identified at the time of the Pre-construction Conference, Section 1.7-3, and shall meet with the Inspector's approval. Should it become

necessary to assign another individual in this position, the Contractor shall provide the Inspector written notification within five (5) working days of the proposed change. The individual assigned shall be approved by the Inspector and shall be capable of assuming the duties as outlined in Section 1.9-1 (a) and (b) herein.

1.10 PLANS AND SPECIFICATIONS

(a) All work shall conform to these specifications, the plans, the Notice to Bidders and the Bid Proposals, which are made a part hereof by reference.

(b) The plans and these specifications are to be considered as mutually explanatory or supplementary, and any feature shown on one and not on the other shall have the same force and effect as though shown on both. Should any discrepancy appear or any misunderstanding arise as to the importance of anything contained in them it shall be called to the attention of the Marine Engineer or Inspector immediately, and no further work performed on the item in question until a decision is reached. Work performed based on such an error, omission, discrepancy or lack of clarity shall be at the Contractor's risk and expense. These plans and specifications shall be used by the Contractor as guides in the prosecution of the work required.

(c) The following plans will be furnished by the Owners to the Contractor: (List of plans is attached ahead of Part II of the specifications). These drawings were produced by computer aided drafting methods. CAD drawings were developed using AUTODESK, AUTOCAD REL.2002.

(d) All Contract and Vendor Plans SHALL be submitted to the U.S. Coast Guard for approval as required.

(e) It is expressly understood that the Contractor shall verify all quantities and figures and will be held responsible for the proper coordination of all dimensions and the work, and that the furnishing of the drawings herewith will not relieve the Contractor from responsibility for errors or omissions in dimensions and quantities. No addition to the cost will be entertained for errors, omissions or for discrepancies found between actual details and the plans and specifications after the proposal has been received.

(f) The Owner reserves the right to alter the drawings to correct or avoid impossible conditions created by prosecution of the work. The alterations necessary in the work, if any, are to be made by the Contractor without additional cost to the Owner.

1.11 DETAIL WORKING DRAWINGS

(a) Detail working drawings shall be prepared in accordance with contractor prepared working drawings list provided ahead of Section II of these specifications. Two (2) copies of each contractor prepared and/or revised drawing shall be submitted to the owner for review and comments. Owner comments, if any, shall be incorporated in drawings and two (2) copies re-submitted to the Owner for final approval prior to submitting to U.S. Coast Guard Marine Safety Center, Washington, D.C. Owner's drawing review action can be expected in one of the following manners:

(1) "APPROVED" - Drawing is acceptable and ready for U.S. Coast Guard review and/or for construction.

(2) "APPROVED SUBJECT TO COMMENTS" - Owner's comments shall be included on drawing at next normal issue, U.S. Coast Guard submittal or issue for construction.

(3) "RETURNED FOR REVISION" - Drawing is not in accordance with contract specification and/or applicable regulatory body (U.S. Coast Guard, IEEE 45, etc.) rules and regulations. Drawing shall be revised and resubmitted to owner for approval prior to issue and/or Coast Guard submittal.

(4) "REJECTED" - Drawing is not in compliance with Contract Specific and shall be redeveloped and resubmitted to owner for review.

(5) "EXAMINED" - Plans, calculations, sketches, etc., are found to be in accordance with contract specifications and do not require specific Owner approval. General data of this nature is supporting documentation.

(b) Contractor shall provide all engineering services necessary for the development and construction of the vessel, including technical calculations, and prepare and submit to the Inspector two (2) copies each for his approval all calculations, shop and working drawings as required. Working and shop drawings will be reviewed and approved, or returned for correction, as promptly as the conditions will permit. No deviations from approved working drawings shall be made without the written approval of the Inspector.

(c) Plans/Drawings shall be prepared by the Contractor's Engineering Design personnel or by subcontract with an approved Engineering Design Agent. All plans shall be prepared using AUTODESK, AUTOCAD REL. 2002. All plans shall be revised providing details, assemblies arrangements and material list to indicate "as built" condition. Hand drawn and ACAD original drawings shall reflect all changes to "as built" conditions. ACAD drawings shall be REPLOTTED on three (3) mil polyester film in accordance with Section 1.11 (d) herein. All revised, Owner furnished and Contractor prepared diskettes shall be provided to Owner.

(d) Original drawings shall be of uniform size 30" x 48" prepared on 3 mil Polyester base drafting film matte both sides and to comply with sample format for title block etc. as provided to the Contractor. All original drawings shall be capable of reproduction in clear and legible copies. Drawing number sequence shall be maintained in accordance with Owner furnished drawings. Original drawings prepared by the Owner and identified in the list ahead of Part II shall be provided to the contractor. Drawings shall be revised to reflect final "as built condition" and submitted to the U.S. Coast Guard for approval. All drawings shall be stamped to indicate final U. S. C. G. approval date and letter file number. Two copies of all Contractor to Coast Guard and the Original and one copy of all Coast Guard to Contractor correspondence relating to plan approval shall be provided to the Inspector.

(e) In developing the working plans and detailed design, the Contractor shall adhere to all salient features and characteristics embodied in the specifications and plans, and the intent thereof. Modifications to the drawings which become necessary during development, or which may be sired by the Contractor to suit his standard practice, shall be brought to the attention of the Inspector at the time of submittal of working drawings for approval. Failure to notify the Inspector will not constitute approval even though the working drawings were approved.

(f) Within 15 days of Contract award, the Contractor shall prepare and submit a drawing schedule for all drawings to be prepared for this contract. The schedule shall be updated monthly and submitted to the Inspector. Upon completion of drawing preparation and revision, the updates only need to be made when new drawings are added or drawings revised. The format of the schedule may use the Contractor's standards but shall incorporate Owner Drawing number, Title, and distribution list with applicable dates.

(g) The Inspector will cooperate with the Contractor in developing a plan approval procedure in order to expedite plan approval with minimum delay. Approval will be given subject to correction by the Contractor of any errors, omissions, and/or interferences contained thereon and compliance with the plans and specifications as previously noted. All revisions made to approved working plans shall be concisely described in a suitable revision column and copies forwarded to the Inspector for comments. Such revisions shall not negate the intent of the original approval without written consent of the Owner.

(h) Upon completion of the contract and at time of vessel delivery, all original drawings and CD's shall become the exclusive property of the North Carolina Department of Transportation and it is expressly understood that the Department of Transportation shall reproduce and issue above noted drawings in any manner it sees fit for future use. Three (3) sets of the final approved copies and one (1) set of the originals shall be delivered with the vessel. Each set of drawings shall be individually packaged or boxed and shall be labeled as to contents. A list of drawings shall be included in each set.

(i) Shop sketches and templates shall be prepared by the Contractor as required for his shop use. Two (2) copies of shop sketches shall be provided to the Owner.

(j) The Contractor shall keep, on the work site, a copy of the drawings (latest revision) and specifications including all authorized supplemental agreements and shall at all times give the Owner and their authorized representatives access thereto. All drawings and specifications, except the signed contract, shall be returned to the Owner at the completion of work.

1.12 ALTERATIONS (CHANGES)

(a) The Owner reserves the right to make any deletions or additions to the work to be performed without invalidating the contract, or giving notices to the sureties. Any change in cost due to alterations or deletions shall be negotiated prior to accomplishment, or performed on a time and material basis as hereinafter provided in this section, at the Owner's option, and approval of any such changes shall be authorized by the Owner and accepted by the Contractor in writing on the Standard form provided prior to start of the work. Optional items, if any, may be approved by issue of a supplemental agreement by the Owner at the cost quoted therefor.

(b) In making any alteration on a time and material basis, the charge or credit for the change shall be determined by the labor rates submitted with the bid proposal and purchase orders for materials to be used. Material shall be at invoiced cost to the Contractor plus 15%. Deletion of equipment and/or material is to be negotiated on a cost of material and labor estimated basis.

(c) The Contractor shall, within five (5) working days, when required by the Owner, furnish to the Owner an itemized breakdown of the man-hours, quantities, and prices used in computing the value of any change that might be ordered.

(d) The completion date will be changed to cover additions to, or deletions from the contract, on a negotiated basis. (Paragraph 1.7 (d) is to be used for guidance.)

(e) The Contractor may not substitute other material for that specified, except as covered by Paragraph 1.8 herein.

1.13 CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE

(a) The Contractor shall not commence work under this contract until he has obtained all the insurance required here under and such insurance has been approved by the Owner; nor shall the Contractor allow any subcontractor to commence work on his subcontract until all similar insurance has been so obtained and approved. Approval of the insurance by the Owner shall not relieve or decrease the liability of the Contractor hereunder.

(b) COMPENSATION AND EMPLOYER'S LIABILITY INSURANCE

The Contractor shall take out and maintain during the life of this contract the statutory Workmen's Compensation and Employer's Liability Insurance for all his employees to be engaged in work under this contract and in case of any such work is sublet, the Contractor shall require the subcontractor similarly to provide Workmen's Compensation and Employer's Liability Insurance for all of the latter's employees to be engaged in such work and shall save the Owner harmless.

(c) BODILY INJURY LIABILITY AND PROPERTY DAMAGE LIABILITY INSURANCE

The Contractor shall take out and maintain during the life of this contract such Bodily Injury Liability and Property Damage Liability Insurance as shall protect him from claims for damages for personal injury, including death, as well as from claims for property damage, which may arise from operations under this contract whether such operations be by himself or by anyone directly or indirectly employed by either of them, and shall save the Owner harmless.

(d) INSURANCE ON VESSEL

The Contractor shall, at his expense, from the time construction starts at his facility to

the time of final acceptance at Hatteras, N.C after completion of all work and testing, furnish all risk insurance as provided in American Institute Builder's Risk Form dated February 8, 1979, amended by striking out line 217 covering the value of the vessel in the full amount and shall save the Owner harmless from any damage whatsoever while the vessel is in custody of the Contractor. The insurance shall be in a responsible company or companies authorized to transact such business in the State in which the construction is being accomplished, and in the State of North Carolina. A statement agreeing to accept service of legal action in North Carolina must accompany the policy. The policy shall be made payable to the Owner. Where the Contractor carries a blank plant policy a rider must be obtained designating the Owner as first beneficiary under the policy in the amount stated.

For the purpose of this Contract the value of the vessel shall be placed at the Total Bid Amount.

1.14 ACCIDENT PREVENTION

Precaution shall be exercised at all times for the protection of persons, including employees, and property. The safety provisions of applicable laws shall be observed. Machinery, equipment and all hazards shall be guarded or eliminated in accordance with the best marine construction safety practices.

1.15 SUBCONTRACTS

The Contractor shall not sublet, sell, transfer, assign, or otherwise dispose of the contract or any portion thereof or of his right, title, or interest therein without written consent of the Inspector. In case such consent is given, the sublet work shall be performed by the Subcontractor

unless otherwise approved in writing by the Inspector. A firm which has been disqualified because of its failure to maintain satisfactory progress will not be approved as a subcontractor until the firm demonstrates the ability to perform the work in a satisfactory manner. Contractor shall submit a certified copy of the actual subcontract agreement executed between the Contractor and Subcontractor prior to written consent being issued by the Inspector. In case such consent is given, the Contractor will be permitted to sublet a portion thereof, but shall perform with his own organization, work amounting to not less the 50 percent of the total original contract amount.

Extra work performed in accordance with Section 1.12 will not be considered in the computation of work required to be performed by the Contractor.

An assignment by operations of law or assignment for the benefit of creditors, or the bankruptcy of the Contractor, shall not vest any right in this contract in the Trustee in bankruptcy, the Contractor's creditors, or the agent of the creditors.

A Subcontractor shall not sublet, sell, transfer, assign, or otherwise dispose of his contract with a Contractor or any portion thereof, or of his right, title, or interest therein without written consent of the Inspector. When directed by the Inspector, the Contractor shall submit a certified copy of the actual subcontract agreement executed between the Subcontractor and the Second Tier Subcontractor. In the event of an assignment by operations of law or the bankruptcy of the Subcontractor, the Contractor shall have the right, power, and authority, in its discretion, without violating the contract or releasing the surety, to terminate the subcontract. An assignment by operations of law or assignment for the benefit of creditors or the bankruptcy of the

Subcontractor shall not vest any right in this contract in the Trustee in bankruptcy, nor the Subcontractor's creditors or agents of the creditors.

Neither the Contractor, nor any Subcontractor, shall enter into any written or oral equipment lease or rental agreement, materials purchase agreement, and/or labor agreement which circumvents the provisions of this article.

If the Contractor or a Subcontractor enters into a lease or rental agreement for equipment based upon payment for a unit of work, such agreement will be considered subletting of the contract unless the lease or rental agreement is with a commercial equipment company, manufacturer, and/or commercial leasing agency and such firm has been approved by the Inspector. An equipment lease or rental agreement which is based upon unit price per unit of time will not be considered subletting of the contract.

The approval of any subcontract will not release the Contractor of his liability under the contract and bonds, nor will the Subcontractor or the second tier Subcontractor have any claim against the Department of Transportation by reason of the approval of the subcontract.

The Contractor shall as soon as practicable after the signing of the Contract, notify the Owner in writing of the names of the Subcontractors proposed for parts of the work and shall not employ any that the Inspector may within a reasonable time object to as incompetent or unfit for any reason.

The Contractor agrees that he is as fully responsible to the Owner for the acts and omissions of his Subcontractors and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

Failure of the Contractor to comply with any of the provisions of this article may be justification for disqualifying the Contractor from further bidding in accordance with the provisions of Section 1.2-11.

1.16 PROTECTION AND CUSTODY OF VESSEL

(a) The Contractor shall take suitable means of protecting the vessel, the engines, and all other machinery, outfit, equipment, piping, wiring, etc. from the start of construction and until the vessel is accepted by the Owner, and he will be held responsible for any damage that may be sustained during this period. (See paragraph 1.13 herein also).

(b) The vessel is agreed to be in the custody of the Contractor from the start of work at his plant until the completion of the vessel, including the tests and trials if required by Section VI herein, and until delivery to the Owner.

(c) The Contractor shall keep all litter and debris removed from the vessel, and shall conform to normal standard safety practices in the prosecution of the work and condition of the shipyard area.

1.17 MATERIAL FURNISHED BY OWNER AND TO BE RETAINED BY OWNER

(a) The Contractor shall receive, handle, and install all Owner furnished material and equipment, if any, and shall provide the required foundation, piping, wiring, etc., to make a complete and satisfactory installation at no additional cost to the Owner as a part of this contract.

1.18 HAULING AND LAY-TIME (SEE SECTION 5.1-5 and 5.1-10)

(a) The Contractor shall provide a suitable marine railway for hauling the vessel and sufficient lay days to complete all work as required, or that may become necessary.

(b) The vessel shall enter the drydock or railway without list and without excessive trim. If any strain or possible damage to the vessel be suspected or observed, the docking operation shall be suspended and necessary corrective measures taken. Blocking and shores shall be arranged in accordance with standard practice, leaving room in way of propellers and other obstructions. The vessel shall remain on the drydock or railway until the underwater work has been satisfactorily completed, then it shall be carefully undocked.

1.19 RAILWAY CERTIFICATION

Contractor shall submit a certificate of condition and capacity of Railway or Drydock intended for use during docking if required. Certificate shall indicate capacity, maximum width, and condition of facility that has been inspected within the preceding 30 days by a Certified Marine Inspector or Registered Professional Engineer.

1.20 GUARANTEE

(a) The Contractor shall guarantee all materials furnished and all workmanship performed by him under these specifications for a period of twelve months following final acceptance by the Owner. This guarantee shall be limited to replacement (including labor) of any parts giving out under normal service because of defect in material or workmanship, and not because of carelessness or neglect on the part of the Owner, his officers or agents; provided further, that any work necessary under this warranty shall be performed without delay by the Contractor at a shipyard or such other place as may be approved by the Owner, and said Contractor shall not be liable for any expense or damages other than as herein called for above. The regular manufacturer's warranty shall be furnished with all equipment, machinery, fitting, etc., provided by the Contractor.

(b) Manufacturer's warranties shall be filed by the Contractor for all equipment provided and installed and said warranties shall be transferred and/or filed in the Owner's name, by the Contractor, for all equipment, machinery, fittings, etc.; regular warranty periods will apply for all component items not hereinafter listed.

(c) The Contractor shall make good all damage to the vessel or its equipment or contents thereof, which is the result of the use of materials, equipment or workmanship which are inferior, defective, or not in accordance with the terms of the contract and shall restore all disturbed work resulting from the same.

(d) If the Contractor, after notice, fails to proceed promptly to comply with the terms of the guarantee, the Owner may have the defects corrected and the Contractor and his surety shall be liable for all expenses incurred.

(e) All special guarantees applicable to definite parts of the work that may be stipulated in the specifications or other papers forming a part of the contract shall be subject to the terms of this paragraph during the life of such special guarantees.

1.21 FINAL TESTS AND TRIALS

(a) All equipment or other materials furnished by the Contractor and all Owner furnished equipment or other materials installed by the Contractor and all workmanship performed by the Contractor shall be tested by the Contractor as called for herein, at his expense as a part of this contract.

(b) All trials shall be conducted by the Contractor at his own expense.

(c) All tests, dock trials, preliminary and sea trials shall be witnessed by the Owner and, as necessary, the U. S. Coast Guard, and any equipment representatives. Any tests or trials

performed in the absence of the Owner will not be recognized and shall be repeated in his presence. (See Part VI herein).

1.22 CERTIFICATES, DOCUMENTS, ETC.

(a) Upon completion of the vessel and prior to acceptance the Contractor shall turn over to the Owner "Consent of Surety," "Affidavit of Payment of Labor and Materials" which shall include a list of material and equipment that is unpaid, waivers from suppliers and a statement that the vessel is free and clear of all liens and any other documents called for in other paragraphs herein.

(b) Upon completion of the vessel and after it is delivered, the Owner shall turn over to the Contractor a certified statement that all work required by these specifications, including any extra work is complete and satisfactory on the date of delivery. This statement in no way affects or reflects on the guarantee covered herein.

(c) Upon completion of vessel construction, the contractor shall provide the Owner with a "Master Builder's Certificate" properly executed and acceptable by the U. S. Coast Guard Documentation Office. Upon the issue of an Official Number, the Contractor shall perform necessary work to permanently install, by welding, vessel's Official Number, to a Main Beam in accordance with Item 5.4-1 (d).

Upon completion of the vessel and prior to acceptance, the Contractor shall turn over to the Owner all copies of documents, reports, certificates, radiographic film, quality control and deficiency reports, etc. pertaining to this contract.

1.23 DELIVERY

(a) The vessel shall be delivered by the Contractor to the Owner at the HATTERAS FERRY TERMINAL, HATTERAS, NORTH CAROLINA.

(b) The Owner shall upon delivery turn over to the Contractor all documents required by these specifications, (paragraph 1.22(b)).

(c) The Contractor shall upon delivery turn over to the Owner all documents required by these specifications (paragraph 1.22(a).

1.24 ACCEPTANCE

When the trials and all tests have been made, and all work completed to the satisfaction of the Owner, the vessel will be formally accepted by the Owner after delivery upon presentation of all necessary documents as described herein.

1.25 FAILURE TO RECOGNIZE

Failure of the Contractor to recognize the need for performance of work or furnishing of materials required to complete the vessel in accordance with the true intent of these specifications shall not be grounds for additional payments or charges under this contract or these specifications.

1.26 PATENT RIGHTS

The Contractor shall pay all royalties and assume defense and indemnity and save harmless the Owner and his officers, from any patent infringements.

There is no knowledge of any infringement.

1.27 WELDING

(a) Qualifications of Welders

All welding performed under this specification shall be done by welders holding a valid qualification certificate issued by the U. S. Coast Guard, or the American Bureau of Shipping, for the class of work to be accomplished. A list of welders and their certification shall be provided to the Owner. The list shall be updated as required.

Qualified welding supervisors shall be employed to assure conformity with standards of workmanship required.

(b) Standards

In general, the design of joints and the amount and type of welding shall conform to Section 30 of A.B.S. Rules for Building and Classing Steel Ships. A more detailed description of the workmanship required can be found under Chapter 52 (Ships) Third Edition of the Welding Handbook, published by the American Welding Society. Electrodes used for welding shall be of type approved by the U. S. Coast Guard for the various types of materials to be welded. Plates shall be smooth and free from wrinkles, uneven joints, wavy surfaces, et cetera. Generally, the welding sequence will be as follows:

1. External seams in hull, trunk, and deckhouse to be double continuous welds.
2. Seams in watertight and oiltight bulkheads to be double continuous welds.
3. Deck fittings and doublers, continuous welds necessary to develop full strength of members; sealing beads elsewhere. Plug welds where required.
4. Frames, brackets, bulkhead stiffeners, floors, webs, stringers, welded continuously at ends to A.B.S. Rules and welded intermittently elsewhere.

5. Welding of secondary members such as bulwark stanchions, supporting brackets for overhang of the decks, facia bars, et cetera, exposed to the weather, shall be sealed welded all around by a light continuous bead of weld. If intermittent welding is necessary in the way of brackets and stanchions to permit fairness, the brackets and stanchions shall be scalloped between weld increments. All such welding shall be made as smooth as practicable to permit adequate paint coverage.

No welding is to be done on hull plating below or near the waterline while the vessel is afloat. Welds shall be uniform and properly sized. Unsatisfactory welding shall be removed, ground smooth and rewelded in a satisfactory manner.

The striking of an arc on any principal hull plate surface is prohibited unless the plate surface on which the arc is struck is to be incorporated in a welded joint. Marks left by an accidental striking of an arc shall be ground out to a smooth contour, taking care that the plate thickness is not reduced more than ten (10) percent. Arc marks which exceed ten (10) percent of the plate thickness shall be reported at once to the Inspector, and corrective action taken as he directs.

U.S. Coast Guard and/or ABS approved welding procedures shall be provided prior to starting construction.

1.28 CARE DURING CONSTRUCTION

All parts of the vessel, including, but not limited to, structure, deck coverings, fittings, equipage, outfit, furniture, insulation, paint work, machinery, auxiliaries, appliances and apparatus, shall be maintained in satisfactory condition during the entire period of construction and fitting out. All dirt, chips, and scrap material shall be cleaned out at frequent intervals during

construction, and no water shall be allowed to remain in the vessel. The vessel must be thoroughly cleaned throughout at the time of delivery to the Owner. Special measures shall be taken to minimize damage incident to storage, installation and construction and to prevent corrosion or other deterioration, especially to all unpainted, polished, and moving parts. All defects, damage, and deterioration of the vessel, its parts, fittings, and outfit that occur before acceptance of the vessel shall be corrected and repaired by the Contractor at his expense. Equipment, prefabricated parts, furniture, and items such as life floats, lines, and canvas, which are stored in warehouses or on piers during the construction period of the vessel, shall be thoroughly examined for and rid of rats and vermin before being placed on board.

1.29 PAYMENTS AND ACCEPTANCE

(a) Payments shall be made as set out in the Contract.

(b) All material and work covered by partial payments made shall thereupon become the sole property of the Owner, but this provision shall not be construed as relieving the Contractor from the sole responsibility for all materials and work upon which payments have been made or the restoration of any damaged work or any responsibility of the Contractor as herein set forth or as a waiver of the right of the Owner to require the fulfillment of all of the terms of the Contract.

(c) Neither the final payment nor any part of the retained percentage shall become due until the Contractor shall deliver to the Owner through the Inspector, Consent of Surety for final payment and an Affidavit of Payments of Claims that all subcontractors and suppliers of either labor or materials have been paid all sums due them for work performed or materials furnished in connection with this Contract or that satisfactory arrangements have been made by the Contractor

with such subcontractors and suppliers with respect to the payment of such sums as may be due them by the Contractor (See paragraph 1.35 also).

(d) ACCEPTANCE OF FINAL PAYMENT CONSTITUTES RELEASE

No certificate for payment issued by the Inspector and no payment, final or otherwise, nor partial or entire use or occupancy of the work by the Owner, shall be an acceptance of any work or materials not in accordance with the Contract, nor shall the same relieve the Contractor of responsibility for faulty materials on workmanship or operate to release the Contractor or his surety from any obligations under the Contract or the Performance Bond. North Carolina General Statute 136-29 (2) applies.

1.30 CONTRACTOR'S TITLE TO MATERIALS

No materials or supplies for the work shall be purchased by the Contractor or by any subcontractor subject to any chattel mortgage or under a conditional sale or other agreement by which an interest is retained by the seller. The Contractor warrants that he has good title to all materials and supplies for which he accepts partial payment.

1.31 CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE CONTRACT

If the work should be stopped under an order of any court or other public authority for a period of three (3) months, through no act or fault of the Contractor or of anyone employed by him, or if the Inspector should fail to issue any certificate for payment within a reasonable time after it is due, or if the Owner should fail to pay to the Contractor within a reasonable time any sum certified by the Inspector, then the Contractor may, upon fourteen (14) calendar days of written notice to the Owner via the Inspector, stop work or terminate this contract and recover from the Owner payment for all work executed.

1.32 OWNER'S RIGHT TO TERMINATE CONTRACT

(a) If the work to be done shall be abandoned or if the Contractor should be adjudged a bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if this Contract or any part thereof shall be sublet without previous approval of the Owners; or if this Contract or any claim thereunder shall be assigned by the Contractor; if any materials or any tools, machinery or other equipment shall be attached or encumbered, which attachment or encumbrance remains undisolved for a period exceeding ten days; or if at any time the Inspector shall be of the opinion, and shall so certify in writing to the Contractor, that the said work is being unnecessarily delayed by the Contractor, or is not executing said Contract in good faith, or is not making such progress in the execution of the work as to indicate its completion within the required time, or if he should persistently or repeatedly refuse or should fail to supply enough properly skilled workmen or proper materials, or persistently disregard laws, ordinances, or the instructions of the Inspector, the Owners shall have the power and right to notify the Contractor to discontinue all work or any part thereof under this Contract and thereupon the Contractor shall discontinue such work or such part thereof as the Owner shall designate and the Owners shall thereupon have the power, by contract or otherwise as they may determine, to enter the premises of the Contractor where said vessel is being constructed and complete the work herein described, or such part thereof as they deem necessary; and to use such tools and other equipment and such materials of every description as may be found upon or designated to be used upon said work, and to procure additional tools and other equipment and additional materials for the completion of the same; and

to debit to the Contractor the expense of labor and of additional materials and of additional tools and other equipment so procured, which additional tools and other equipment shall be and remain the property of the Contractor upon the completion of the work; and to credit him with the value of the work so done, as estimated by the Inspector.

(b) The excess of any cost to the Owners caused by or arising from its having taken over the completion of said vessel including compensation for additional inspection, managerial and administrative services shall be paid to said North Carolina Department of Transportation by the Contractor or by the surety on its performance bond, and in such accounting, the Owners shall not be held to obtain the lowest cost for the work of completing the Contract, or any part thereof, but all sums actually paid therefore shall be charged to the Contractor.

(c) It is further agreed that in case the Contractor shall not fully complete the Contract work at the time stipulated, the Owners, in lieu of the foregoing provision, may at its option pay the Contractor for the parts already done, according to the provisions of the Contract, and these Specifications, and may treat and consider the parts remaining undone as if the Contract was cancelled or abandoned by said Contractor or as if they had never been included in or contemplated by this Contract.

(d) No action, proceeding or notice contemplated by the Contract on the part of the Owners or Inspector and nothing herein contained shall operate as a waiver or release of any rights of the North Carolina Department of Transportation under this agreement against either the Contractor or its Surety.

(e) For purposes of the above "Abandonment of Work" shall mean any consecutive period of ten (10) calendar days without performance of work on the vessel by the Contractor.

1.33 CLIMATIC CONDITIONS

When so ordered by the Inspector, the Contractor shall suspend any work that may be subject to damage by climatic conditions existing or predicted for the area within 24 hours.

1.34 TAXES

The Contractor shall without additional expense to the Owner pay all applicable federal, state and local and other taxes that are assessed against this work.

1.35 ASSIGNMENTS

The Contractor shall not assign any part of the Contract nor shall the Contractor assign any claim due under the Contract or monies due or to become due under the Contract.

1.36 SPECIAL NOTES

(a) All bidders are cautioned to clarify any questions prior to submission of proposal.

(b) The submission of a bid will be considered an acceptance of all requirements of these Specifications and all governing laws and ordinances without exception.

(c) There may be requirements for manufacturers or their representative personnel to perform work on some items of the ship's equipment not covered by these Specifications, while at the Contractor's plant. These persons shall be allowed access to the vessel during normal working hours to perform their work. The Contractor shall provide a reasonable amount of electric power for hand tools and lighting as required.

(d) Any questions concerning these Specifications should be addressed to:

North Carolina Department of Transportation
Ferry Division
Room 120 - Maritime Building
113 Arendell Street
Morehead City, North Carolina 28557
Telephone: (252) 726-2097
Fax: (252) 726-2903

(e) The Owners reserve the right to waive informalities or to reject any or all bids.

(f) All bidders shall be prequalified by the Department of Transportation at least two (2) weeks prior to bid opening.

(g) Proposals received after the date and time set for the opening regardless of the cause will be returned unopened.

(h) COAST GUARD INSPECTION OF THIS VESSEL IS REQUIRED

1.37 GUARDING

All moving parts of machinery, shafts, etc., shall be shielded to prevent injury to personnel. Shielding fitted on items requiring frequent attention shall have doors, covers or be readily portable.

1.38 QUALITY CONTROL

(a) A competent employee of the Contractor, satisfactory to the Owner, shall from the start of work until the completion of the vessel, maintain quality control over the job. He shall make such inspections and investigations as are necessary to insure that the quality of workmanship, materials and testing is in accordance with that specified.

(b) The quality control employee shall prepare and maintain records of his actions, provide copies to the Inspector and cooperate with the Inspector.

(c) The Inspector shall have access to the quality control employee and his records at all reasonable times during working hours.

1.39 CONTRACT TIME

Contract time shall be the number of calendar days inclusive between the date of availability and the completion date, said dates as being set forth below, including authorized extensions to the completion date.

Date of Availability for this contract is: April 01, 2005.

Final contract completion date for this contract is: March 31, 2006.

Total availability shall include at least seven (7) working days of Contractor's representative(s) at Hatteras Inlet Terminal to provide operational instructions to Ferry Division personnel prior to final acceptance.

PLAN LIST
OWNER FURNISHED PLANS

PROJECT WBS 34132.1.6

180' DOUBLE ENDED PASSENGER/AUTO FERRY
VOITH/SCHNEIDER PROPULSION UNITS

TITLE	DRAWING NUMBER
LINES & OFFSETS	NEWHAT-01 (VSP)
OUTBOARD PROFILE	NEWHAT-04 (VSP)
ARRANGEMENT MAIN DECK & ABOVE	NEWHAT-05 (VSP)
INBOARD PROFILE & HOLD	NEWHAT-06 (VSP)
MIDSHIP SECTION	NEWHAT-07 (VSP)
TRANSVERSE FRAMES	NEWHAT-07A (VSP)
TRANSVERSE FRAMES	NEWHAT-07B (VSP)
TRANSVERSE FRAMES	NEWHAT-07C (VSP)
VOITH UNIT FOUNDATIONS	NEWHAT-07D (VSP)
TRANSVERSE FRAMES	NEWHAT-07E (VSP)
HULL & MAIN DECK STRUCTURE	NEWHAT-08 (VSP)
SKEGS	NEWHAT-08A (VSP)
LONGITUDINAL HULL STRUCTURE	NEWHAT-09 (VSP)
TRANSVERSE BULKHEADS	NEWHAT-10 (VSP)
STRUCTURE ABOVE MAIN DECK	NEWHAT-12A&B (VSP)
STRUCTURE ABOVE MAIN DECK-DECKS	NEWHAT-13 (VSP)
ENGINE ROOM VENTILATION	NEWHAT-15 (VSP)
SEACHEST DETAILS	NEWHAT-16 (VSP)

INSULATION & FIRE BOUNDARY DIAGRAM	NEWHAT-17 (VSP)
MAIN AND GENERATOR ENGINE FOUNDATIONS	NEWHAT-19 (VSP)
MACHINERY ARRANGEMENT	NEWHAT-20 (VSP)
PROPULSION SHAFTING ARRG'MT. & DETAILS	NC-230-0022 (VSP)
BILGE PIPING SYSTEM	NEWHAT-23 (VSP)
FIREMAIN & SPRINKLER SYSTEM	NEWHAT-24 (VSP)
MAIN & GENERATOR ENGINE COOLING PIPING	NEWHAT-25 (VSP)
VENTS, FILLS & SOUNDS	NEWHAT-26 (VSP)
POT. WATER & SAN. FLUSHING WATER SUPPLY	NEWHAT-27 (VSP)
MSD PIPING & MISCELLANEOUS DRAINS	NEWHAT-28 (VSP)
FUEL OIL PIPING	NEWHAT-29 (VSP)
MAIN AND GENERATOR EXHAUST PIPING	NEWHAT-30 (VSP)
SHIP'S SERVICE AIR DIAGRAM	NEWHAT-31 (VSP)
H.V.A.C. ARRANGEMENTS & DETAILS	NEWHAT-32 (VSP)
ELECTRICAL LOAD & SHORT CIRCUIT ANALYSIS	NEWHAT-33 (VSP)
ELEC. WIRING DIAGRAM & GEN. ALARM SYSTEM	NEWHAT-34 (VSP)
WIREWAY DIAGRAMS	NEWHAT-35 (VSP)
POWER DECK PLAN	NEWHAT-36 (VSP)
LIGHTING DECK PLAN	NEWHAT-37 (VSP)
NAVIGATION LIGHTS	NEWHAT-38 (VSP)
SAFETY EQUIPMENT ARRANGEMENT	NEWHAT-39 (VSP)
DOCKING PLAN	NEWHAT-40 (VSP)
HULL MARKING-PAINT & TRIM DETAILS	NEWHAT-42 (VSP)

MISCELLANEOUS PAINT & TRIM DETAILS	NEWHAT-42A (VSP)
DOORS, MANHOLES & WINDOWS SCHEDULE	NEWHAT-43 (VSP)
VEHICLE AND PERSONNEL BARRIERS	NEWHAT-44 (VSP)
LADDERS & STAIRWAY DETAILS	NEWHAT-45 (VSP)
HANDRAIL SECTIONS & DETAILS	NEWHAT-46 (VSP)
HANDRAIL SECTION & DETAIL	NEWHAT-46A (VSP)
CO2 SUPPRESSION SYSTEM	NEWHAT-47 (VSP)
CO2 SUPPRESSION SYSTEM	NEWHAT-47A (VSP)
MISCELLANEOUS FOUNDATIONS	NEWHAT-50 (VSP)
MAST DETAILS	NEWHAT-51 (VSP)
FUEL OIL TANK "A" END	NEWHAT-55 (VSP)
FUEL OIL TANK "B" END	NEWHAT-55A (VSP)
POTABLE WATER TANK "A" END	NEWHAT-55B (VSP)
PILOT HOUSE CONSOLE	NEWHAT-58 (VSP)
ENGINEER'S OPERATING STATION STRUCTURE AND DETAILS	NEWHAT-59 (VSP)
MISCELLANEOUS TANKS	NEWHAT-62 (VSP)
RESCUE LADDER MODS.	NEWLADDER.DWG

NOTE:
(1) The above titled "Owner Furnished Plans" are intended for guidance only. These drawings shall be revised by the Contractor as required to show any and all changes and modifications resulting from the Contract Specifications and any changes required by U.S. Coast Guard comments and requirements. All calculations required to support the U.S. Coast Guard review and approval process shall be provided by the Contractor with copies provided to the Owner.

(2) All drawings shall be prepared in accordance with Section 1.11 of these Specifications. All drawings shall be submitted by the Contractor to the U.S. Coast Guard Marine Safety Center for review and approval.
(3) The Contractor shall remove from all Owner Furnished Plans references relating to U.S. Coast Guard Approvals, all revision numbers, all references to drawn or checked by in the Seal area of Title Block, all notes in Revisions columns and Orange Shipbuilding Title Blocks. Contractor shall begin all Owner Furnished Plans as Revision 0.
(4) All designs and plans shall become the exclusive property of the Owner.

NOTE: Particular attention shall be directed at the Owner Furnished Plans for the installation of the Voith Propellers as they relate to the Main Engine Foundations, Propulsion Shafting Arrangements & Details. Attention should also be directed at the Owner Furnished Plans for the installation of Main & Generator Engine Cooling Piping, Generator Foundations, Main & Generator Exhaust Piping and Voith Unit Foundations. Because of the changes in Main Engine and Reduction Gear requirements and changes in Ship Service and Emergency Generators and propulsion shaft line arrangements these drawings will most probably require revisions. The Contractor shall be responsible for all changes in dimensions, quantities and arrangements brought about by the Contract Specifications regarding any and all changes from the Owner Furnished Plans and the revisions required to incorporate newly specified materials and equipment.

PLAN LIST

(CONTRACTOR FURNISHED PLANS)

PROJECT WBS 34132.1.6

	DRAWING	REMARKS
(1)	Stability Booklet	Prepared in accordance with NVIC 15-81.
(2)	Electrical Load Analysis Including Short Circuit Analysis	In accordance with Specification Item 1.11
(3)	Sounding Tables; Fuel Oil & Potable Water	Chart in gallons and inches 8.5" X 11" (4 copies)
(4)	List of Electrical Equipment	Provide typed list of electrical equipment to include service, type, manufacturer, all motor data, location, etc.
(5)	Direct Current Distribution Panel	Prepared in accordance with Specification Item 4.31 and Items 1.10 and 1.11 of these Specifications

Vendor Required Drawings

(1) Fixed & Semi-Portable CO2 System Details.

(2) Main & Emergency Switchboards.

(3) Navigation Light Control Panel.

(4) Engineer's Alarm System.

(5) Sound Powered Telephone System.

(6) General Alarm System.

(7) Public Address System.

(8) Passenger Information System.

(9) Main Engine Throttle Control Systems Plans and Design Verification Test Procedures and Qualitative Failure Analysis.

(10) Voith Propeller Control Systems Plans and Design Verification Test Procedures and Qualitative Failure Analysis.

(11) Electronics Systems Installation including Radios, Radars, GPS System, Fathometers and Weather Monitoring System.

(12) Design Verification and Periodic Safety Test Procedures as required by Title 46 CFR Subpart 61.

(13) All plans, specifications, instructions and documentation required by Title 46 CFR Subpart 62

Notes:
(1) The above list of Contractor and Vendor Furnished Drawings is considered to be a minimum requirement. Additional drawings shall be provided as required to accomplish construction and to satisfy U.S. Coast Guard requirements. The Contractor in accordance with Specification Item 1.11 shall submit all drawings to the U.S. Coast Guard for approval.
(2) All drawings shall, at a minimum, include piece numbers, list of materials, manufactures of components, quantities and symbols list as required. All calculations required to support the U.S. Coast Guard review and approval process shall be provided by the Contractor with copies provided to the Owner. All drawings shall be prepared as required by Item 1.10 and 1.11 of these Specifications.
(3) All designs and plans shall become the exclusive property of the Owner.

SECTION II

CONSTRUCTION SPECIFICATIONS

PROJECT WBS 34132.1.6

2.0 STRUCTURAL

2.1 DRAWINGS

Plans provided to the Contractor at time of bidding are to be used for Guidance only. It shall be the Contractor's responsibility to verify quantities, provide additional working drawings, calculations and sketches, if required and obtain approval of same from the Owner and the U.S. Coast Guard Marine Safety Center. The Contractor shall submit all required plans to the U.S. Coast Guard Marine Safety Center for review and approval. Any changes or deviations from the Plans or Specifications resulting from U.S. Coast Guard review shall be incorporated into the construction of the vessel at no additional cost to the Owner. Plans shall be in accordance with Paragraph 1.11 of this specification.

2.2 WELDING SCHEDULE

A Welding Schedule shall be developed by the Contractor in accordance with Section 1.27 (b) and submitted to the Owner and U.S. Coast Guard Marine Safety Center for approval prior to commencing work. Welding details shall be incorporated on appropriate drawings. Limber holes and snipes shall be wrapped welded.

2.3 LOFTING

Hull lines shall be carefully faired and off-sets corrected by one of the following methods:

(a) Full size lay-down on mold loft floor.

(b) Computer faired Off-Sets.

Templates shall be made where required for steel lay-off. Off-sets shall be taken at each frame and three (3) copies of corrected off-sets provided to the Inspector prior to steel lay-off.

2.4 HULL STRUCTURE

All steel shapes and plate shall conform to ASTM A-36 steel with certified mill test reports.

2.4-1 CENTER VERTICAL KEEL

Center vertical keel shall be made of a 30.6# plate with an 8" by 1" thick flat bar rider plate as shown on plans. CVK shall be continuous through bulkheads.

2.4-2 LONGITUDINALS (HULL)

(a) Hull longitudinals shall be fitted at 11'-3" off centerline port and starboard. Longitudinals shall be a 15" x 15.3# plate with 5" flange as shown on plans. Longitudinals shall be continuous through bulkheads as shown on plans.

(b) Tripping chocks shall be fitted at each frame and shall be 15.3# plate as shown on plans.

2.4-3 MAIN DECK LONGITUDINALS

(a) Main deck centerline longitudinal shall be 15" x 5" x 25.5# flanged plate as shown on plans. Tripping chocks of 15.3# plate shall be fitted at each frame as shown on plans. Longitudinal shall be continuous through bulkheads.

(b) Two (2) longitudinal stringers, one (1) port and one (1) starboard, shall be installed 11'-3" off centerline from frame 44A to frame 44B. Longitudinals shall be 15"x 15.3# flange plate with 5" flange as shown on plans. Tripping chocks of 15.3# plate shall be fitted at each frame as shown on plans.

2.4-4 STANCHIONS

(a) Stanchions of 4" schedule 40 pipe shall be fitted between hull and deck longitudinal on centerline and 11'-3" off centerline, port and starboard, with locations as shown on plans. Each stanchion shall be fitted with 15.3# plate brackets and doublers at hull and deck longitudinal as shown on plans.

(b) Stanchions at frames 0, 4A and 4B on centerline shall be 6" schedule 40 pipe. Each stanchion shall be fitted with 15.3# plate brackets and doublers at CVK and centerline deck longitudinal.

(c) Install 4" schedule 40 pipe stanchions at frame 16A, 16B, 20A, 20B, 24A, 24B, 32A, 32B, 36A and 36B. Stanchions shall be located 18" off centerline port and starboard. Each stanchion shall be fitted with 15.3# plate brackets and doublers at hull and deck transverse webs as shown on plans.

(d) Install 4" and 6" schedule 40 pipe stanchions at frame 40A and 40B as shown on plans. Each stanchion shall be fitted with 15.3# plate brackets and doublers top and bottom.

2.4-5 FLOORS

(a) Floors shall be installed on frames from frame 50 A to frame 50 B except in way of watertight and non-tight bulkheads and in way of Voith Schneider Propulsion units as shown on plans.

(b) Floors shall be 12.75# plate with 3" flange 15" deep at keel extending outboard port and starboard to junction with frames as shown on plans.

2.4-6 FRAMES

Transverse frames shall be 4" x 3" x 5/16" angles, inverted, spaced 21 inches apart, joined together at chines and deck beams with 12.75# plate with 3" flanges as shown on plans.

2.4-7 WEB FRAMES (Bottom)

Web frames shall be 15" x 12.75# plate with 3" flanges fitted as shown on plans.

2.4-8 WEB FRAMES (Main Deck)

Web frames shall be 15" x 15.3# plate with 5" flanges fitted as shown on plans.

2.4-9 END FRAMES

(a) Non-watertight 12.75# plate bulkheads shall be installed at frames 46A and 46B and 48A and 48B as shown on plans.

(b) Suitable reinforcement shall be installed as shown on plans and as required.

2.4-10 BEAMS

Main deck beams shall be 6" x 4" x 3/8" inverted angles, spaced 21" apart, joined to side frames by 12.75# brackets with 3" flanges. Beams shall be continuous from centerline stringer to shell.

2.4-11 SHELL PLATING

(a) Shell plating shall be 12.75# plate throughout, except the garboard strakes shall be 15.3# plate from frame 33 1/2A to 33 1/2B and from centerline to chine bar port and starboard.

(b) Bow shell plating shall be 25.5# plate from frame 50A and 50B to frames 33 1/2A and 33 1/2 B from keel to chine bar port and starboard.

(c) Sheer strake from Main Deck to knuckle shall be 30.6# plate, 12" wide.

2.4-12 WATERTIGHT BULKHEADS AND STIFFENERS

(a) All watertight bulkheads shall be 12.75# plate with 5" x 3" x 1/4" inverted angle stiffeners, spaced as shown on plans (**maximum spacing 28").**

(b) Doublers or sleeves shall be fitted and installed in way of bulkhead penetrations.

2.4-13 DECK PLATING

Main deck plating shall be 3/8" thick plate of approved multi-grip pattern, with thickness measured in valleys.

2.4-14 CHINES

Chine bars shall be fitted as shown on plans. Chines shall be 2" diameter medium steel rod meeting grade "A" requirements of A.B.S. Rules, Section 43.

2.4-15 MAIN DECK OVERHANG (A and B END BOW)

Main deck overhang brackets shall be 15.3# plate with 3" flange as shown on plans.

2.4-16 DOCK GUARD AND BEAM END MEMBERS

(a) A 30.6# x 10" face plate shall be installed around the entire main deck.

(b) A split 8" schedule 80 pipe rubrail shall be installed from frame 35A to 35B port and starboard. Taper ends and grind all welds smooth.

2.4-17 SKEGS

(a) A centerline skeg shall be installed from frame 6A to 35A and from 6B to 35B and from frame 46A to 49A and from frame 46B to 49B (see lines plan) constructed of 12.75# side plating and 20.4# bottom plating.

(b) Skegs shall be tapered, hollow construction with widths (half breaths) as shown on lines plan.

(c) Skegs shall be fitted with suitable transverse framing and/or webs and made watertight.

(d) Stainless steel half couplings shall be installed in side plating and shall be fitted with 2" brass flush plugs as shown on plans.

(e) Install liquid rust inhibitor in all skegs after air testing to prove watertight.

2.4-18 MISCELLANEOUS

(a) The hull shall be suitably strengthened by installing headers, brackets, etc.

(b) Miscellaneous brackets, gussets, supporting members, coamings, splash rails, etc shall be provided as necessary and as shown on plans.

(c) Lightening holes, accesses and other openings shall be provides as necessary and as shown on plans. Lightening holes in side shell brackets shall be sized not to exceed 254 square inches in area.

(d) All steel shall be ASTM-A36 with proof by providing Inspector with mill certification or A.B.S certification. See special provision for purchase of domestic steel products.

2.4-19 SCUPPERS AND WATERCOURSES

All members shall be sniped at lower corners in bilges and limber holes (minimum 1/2" radius or 1/2" x 1/2" snipe) provided wherever needed to permit drainage to the low point of the space or deck. Freeing ports shall be fitted in main deck and/or bulwark as required to disperse wash down and rain water.

2.4-20 ALUMINUM DECK PLATING BELOW MAIN DECK

The Contractor shall develop necessary drawings for the installation of aluminum deck plates in Engine Room including Engineers Operating Station, Voids 2A and 2B and Voith Schneider Propulsion System Compartments. Deck plates shall be installed to provide complete coverage of Engine Room and Voids 2A and 2B between the 11'-3" bottom longitudinal girders including raised areas over propulsion shafts. Deck plates shall be installed to provide walkways and access to M.S.D. Unit and Chlorine Tank. Install plating about 2'9" above baseline throughout all compartments. Grating shall be 1/4" thick aluminum approved pattern plate supported by 3" x 2" x 1/4" angles (beams and stanchions) welded top and bottom to suit compartment arrangement. Plating shall be portable type bolted down with 3/8" diameter allen head countersunk stainless steel machine screws. Angle frames shall be drilled and tapped. Install 1/8" thick rubber between angles and aluminum plating. Flush hinged plates shall be provided for quick access to valves and bilge suction foot valves located below deck plating. Hinges shall be stainless steel. All sharp edges on deck plating shall be ground to a smooth contour. Individual deck plates shall not exceed 2' x 4' in size.

2.4-21 ALUMINUM DECK PLATING IN PILOT HOUSE

Deck plating shall be 1/4" thick smooth aluminum supported by 6" x 10.2# flange plate with 2" flange as shown on plans. Plating shall be portable bolted down with 3/8" diameter allen head countersunk stainless steel machine screws. Flange plate shall be drilled and tapped.

Plating shall be arranges in approximately six (6) sections with each section bordered by 1/8" x 1 1/4" flat bar so as to create a frame for the tile required in Section 2.18 of these Specifications. Flat bar shall be attached independently to deck plate with countersunk stainless steel screws.

2.5 SUPERSTRUCTURE

2.5-1 DECKHOUSE (MAIN DECK TO UPPER DECK)

The deckhouse shall be constructed of steel plate and shapes as follows:

(a) Sides and End Plating – 10.2# plate.

(b) Deck Plating – Main Deck – See 2.4-13

(c) Deck Plating – Upper Deck and Bridge Deck – 10.2# plate.

(d) Vertical Stiffeners – 4" x 3" x 1/4" angles main to upper deck.

(e) Beams – Upper Deck – 5" x 3 1/2" x 1/4" angle.

(f) Interior Bulkheads and Vent Trunks – 7.65# plate with 4" x 3" x 1/4" vertical stiffeners as required.

(g) Brackets, Gussets, etc. – 10.2# plate with 3 1/2" flange.

2.5-2 BRIDGE DECK – PASSENGER LOUNGE (UPPER DECK TO BRIDGE DECK)

The Upper Deck to Bridge Deck structure shall be constructed of steel plate and shapes as follows:

(a) Sides and End Plating – 7.65# plate.

(b) Bridge Deck – 10.2# plate

(c) Vertical Stiffeners – 3" x 2" x 1/4" angle.

(d) Beams – Bridge Deck – 5" x 3 1/2" x 1/4" angle.

(e) Bridge Deck Overhang Stanchions and Brackets – Exterior – 5" x 3 1/2" x 1/4" angle and 4" x 4" x 1/4" stainless steel tubing as shown on plans.

(f) Brackets, Gussets, etc. – 10.2# plate with 3 1/2" flange.

(g) Interior Bulkheads, Except Joiner Bulkheads – 7.65# plate with 3" x 2" x 1/4" vertical stiffeners as required.

2.5-3 PILOT HOUSE (BRIDGE DECK TO TOP OF PILOT HOUSE)

The Pilot House shall be constructed of steel plate and shapes as follows:

(a) Ends and Sides – 7.65# plate.

(b) Vertical Stiffeners – 2 1/2" x 1 1/2" x 1/4" angles, inverted and 2 1/2" x 1 1/2" x 3/16" tubing (window headers) spaced as shown on plans.

(c) Top of Pilot House Beams – 6" x 1/4" flat bar transverse stiffeners and 6" x 4" x 1/4" angle longitudinal stiffeners as shown on plans.

(d) Top – 10.2# plate.

(e) Sun Shield Fashion Plate – 10.2# plate, 1/2" round bar and 3/16" plate brackets.

2.5-4 BULWARK

The Main Deck Bulwark shall be 42" high from frame 0 to frame 29A and 29B. Bulwarks shall be faired from frame 29A and 29B forward to the bow stanchions. Height of bulwark at bow stanchion shall be 54". Bulwarks shall be 10.2# plate with a 4" x 2" x 3/16" structural tubing cap.

Suitable stiffening shall be provided by installing 15.3# plate brackets port and starboard, as shown on plans. Bow stanchions and after bulwark stanchions shall be 6" schedule 80 pipe fitted with a 7" diameter by 15.3# plate cap and a 18" diameter x 30.6# plate doubler fitted on Main Deck. Bevel edge of doubler. Seal weld all members.

2.5-5 FASHION PLATE (MAIN DECK TO PASSENGER DECK)

The Fashion Plate shall be 10.2# plate with 4"x 2" x .1875" stainless steel tubing stiffeners. Headers shall be 4" x 2" x .1875" tubing at 41 1/2" and 90 1/2" above main deck.

2.6 RAILS

(a) Deck Rails – Deck Rails shall be installed around Upper and Bridge Decks and shall be three courses of 1 1/4" schedule 40 stainless steel pipe handrails. Upper Decks hand rains shall be fitted with flattened stainless steel expanded metal style 3/4" No. 9 and stainless steel flat bar installed in portable panels, between rail courses and stanchions as shown on plans. Panels shall be secured to rails with stainless steel fasteners. The expanded metal protecting the deck rail openings and its installation are subject to final acceptance by the cognizant Officer in Charge, Marine Inspection. See 46 CFR 72.40-5(a) and (c). Expanded metal shall be seal welded to the interior edge of flat bar frame work.

(b) Interior Rails – All courses of railing along walkway plating shall be made of 1" schedule 40 steel pipe.

(c) Hand Rails – Hand Rails at stairs and ladders shall be 1 1/4" schedule 40 stainless steel pipe, fastened to ladders or structure with suitable brackets or clips of steel plate.

Main Deck to Upper Deck exterior ladder hand rails shall be fitted with flattened stainless steel expanded metal as in paragraph (a) of this section.

(d) Life Rails – Life Rails shall be 3/4" stainless steel pipe fitted on the outside of deckhouse, port and starboard, 42" above deck. Life Rails shall be set 4" out from bulkheads.

(e) General – All rails shall be smooth and free of abrasions, sharp corners and defects which might injure persons sliding hand on or along the rails.

2.7 BARRIERS AND RUBBING GUARDS

2.7-1 SAFETY BARRIERS

(a) The Contractor shall provide and install at each end of the main deck between bulwark stanchions a 42" high, 6" x 6" mesh nylon web barrier. The Barrier shall be fabricated from MIL-W-23223 nylon 1-3/4" wide, minimum .075 inch thick material. The Barrier shall be fabricated with a minimum three (3) loops at each end to facilitate attachment to bulwark stanchions. Attachment to bulwark stanchions shall be accomplished by using minimum 3/8" chain shackles at one side and a series of three (3) short lengths of 3/8" chain attached to barrier on the opposite side. A minimum of three (3) 3/8" chain hooks shall be welded to bulwark stanchions at each end of main deck, spaced to accommodate loop spacing in barrier to allow attachment of 3/8" chain to bulwark stanchions. Barriers shall be as supplied by Tidewater Supply Company, P.O. Box 13146, Roanoke, VA 24031, telephone 504-342-6107, or equal.

(b) Provide and install two (2) equally spaced portable 2" schedule 40 stainless steel pipe stanchions at each end of main deck in line with bulwark stanchions to support net barriers. Stanchions shall be fitted with 1/2" stainless steel round bar hooks to hold net barriers in place.

Provide and install stainless steel pipe sockets recessed in main deck to support portable stanchions. Provide stainless steel pipe sockets, total of 4, on main deck adjacent to bulwark stanchions to be used to store portable stanchions when net barriers are open. Pipe sockets shall be located outside of vehicle runways and shall not interfere with equipment stored or located on interior of bulwark.

2.7-2 RUBBING GUARDS

(a) Install 3" schedule 80 steel pipe tire guards 2 1/2" inboard of the bulwark stiffeners and centered 6" above deck on port and starboard sides of main deck as shown on plans. Guards shall be supported by 15.3# plate brackets fitted on alternate frames and elsewhere as shown on plans.

(b) Install 8" x 10.2# with 6" flanged plate tire guards adjacent to superstructure as shown on plans. Radius ends to prevent injury or damage. Tire guards shall be continuously welded to deck and superstructure. Provide 1/2" pipe half couplings and flush brass plugs in each section of tire guard to facilitate air test. Air test all sections of tire guards to prove watertight tight.

2.8 MOORING, ANCHORING AND DECK FITTINGS

Mooring, Anchoring and Deck Fittings and their installation are subject to final acceptance by the cognizant Officer in Charge, Marine Inspection.

2.8-1 CLEATS AND CHOCKS

(a) Ten (10) 30" cast steel cleats similar to DWG E-120, J.C. MacElroy, 91 Ether Road West, Piscataway, NJ shall be installed as shown on plans with 1/2" doubler plates continuously welded to deck.

(b) Ten (10) closed railing chocks similar to DWG E-231, J.C. MacElroy, shall be installed complete with headers as shown on plans.

2.8-2 ANCHOR AND CHAIN

One (1) 150# "Danforth" anchor shall be provided and stowed on the bulwark as shown on plans. Suitable clips and securing fittings shall be provided. One hundred twenty feet of 1/2" diameter galvanized proof-coil chain, with galvanized shackles and swivel, shall be provided on anchor and stowed in a metal box on port inboard side of the bulwark adjacent to anchor.

The bitter end of the chain shall be secured to a pad eye installed on the main deck near the chain box and the other end to a swivel and shackle on the anchor. Anchor arrangement shall be to the satisfaction of the cognizant Coast Guard Inspector.

2.8-3 MOORING LINES

Provide four (4) 1 1/4" diameter, double braid, nylon rope mooring lines. Each line shall be 100 feet long with a four (4) foot bight spliced in one end and properly seized on the other end. Mooring lines shall not be used during construction of the vessel.

2.8-4 MISCELLANEOUS DECK FITTINGS, ETC.

(a) All miscellaneous small cleats, ring bolts, padeyes, label plates, clips, lashing eyes, etc. as generally required on a vessel of this class and service shall be provided.

(b) All label plates shall be deeply engraved 316 stainless steel welded to deck, bulkhead or bulwark.

2.9 DOORS

2.9-1 DOORS – GENERAL

All doors shall have sills as shown on plans. All hollow type doors shall be coated thoroughly with corrosion preventative compound on interior surfaces before assembly. Exterior surfaces of all doors shall be coated with the same paint system as adjoining structure in which they are installed.

All doors exposed to the weather and not protected by overhangs shall have 1" x 1/4" flat bar watersheds welded above the door.

All doors, except watertight doors, shall be fitted with substantial commercial type hooks and stops to secure them in the open position. Passenger toilet doors and passenger cabin doors shall be fitted with heavy duty, corrosion proof, door closures. All door locks shall be keyed alike.

All joiner and weather tight doors shall be installed with 1/4" diameter, hex head, stainless steel machine screws with nuts, flat washers and lock washers spaced on 3" centers. Apply sealant between door frame and structure.

NOTE: All joiner doors opening to the exterior of the vessel shall be fitted with weather and fume tight frames, Type "B", with "T" style sill designed for bolted installation.

2.9-2 PILOT HOUSE DOOR

Provide and install "Weather-Tight" door in the longitudinal bulkhead as shown on plans. Door, frame and sill shall be stainless steel, style CC 3009, fitted with 1/4" clear safety glass top panel as constructed by Cornell-Carr Company. Door shall be fitted with stainless steel hinges, Type "C" latch assemble with quadrant handle.

2.9-3 PASSENGER LOUNGE

Provide and install two (2) "Weather-Tight" doors in transverse bulkheads as shown on plans. Doors, frames and sills shall be stainless steel, style CC 2006-A, fitted with 1/4" dark tinted safety glass top panel as constructed by Cornell-Carr Company. Doors shall be fitted with stainless steel hinges. Doors shall be fitted with Von Duprin 900EO-32D exit only panic device and Von Duprin 900L-32 lever entry device or an approved equal.

2.9-4 PASSENGER TOILET DOORS

Provide and install two (2) joiner doors in transverse bulkheads of Main Deck Superstructure, one at frame 12A and one at frame 6B. Doors, frames and sills shall be stainless steel, style CC 2007-B as constructed by Cornell-Carr Company. Doors shall be fitted with stainless steel hinges. Doors shall be fitted with stainless steel, commercial grade pull handles and push plates on exterior sides and stainless steel, commercial grade pull handles and push plates and heavy duty roller latches to hold doors in closed position and positive locking mechanisms with panic type releases on interior sides. Keyed access shall be provided from door exterior side with all doors keyed alike. Doors shall be fitted with 2" sills at main deck.

2.9-5 ENGINEER'S OPERATING STATION DOOR

Provide and install one (1) joiner door in Engineer's Operating Station at frame 8B. Door, frame and sill shall be steel construction, style CC 2006-A as constructed by Cornell-Carr Company. Door shall be fitted with steel hinges and mortise lock set **WITHOUT LOCK**. Door shall be fitted with flush sill at deck. Door shall have sound dampening insulation installed.

2.9-6 EMERGENCY GENERATOR SPACE DOORS

Provide and install two (2) "Weather-Tight", exterior mounted, sliding doors in longitudinal bulkheads at approximately frame 5A port and starboard as shown on plans. Doors, frames and sills shall be stainless steel, style CC 2017 as constructed by Cornell-Carr Company. Doors shall be fitted with stainless steel guide, bronze sheaves and track and lever handle mortise lock sets. Doors shall be fitted with flush sill at tire guard. Modify bottom door track by installing a 1" x 3/16" stainless steel flat bar on inboard side of each door to prevent water from entering space.

2.9-7 LIFE PRESERVER LOCKER DOORS

Provide and install two (2) "Weather-Tight", exterior mounted, joiner doors in longitudinal bulkheads at approximately frame 13A and 13B on Passenger Lounge Deck as shown on plans. Doors, frames and sills shall be aluminum, style CC 2004-A. Doors shall be fitted with stainless steel hinges and stainless steel lever type lock set on the exterior side of door ONLY. No provisions shall be provided to lock doors.

2.9-8 WATERTIGHT DOORS

Provide and install four (4), six (6) dog, watertight, steel, quick acting type doors in main transverse watertight bulkheads at frames 12A, 12B, 28A and 28B of size and location as shown on plans. Provide and install one (1), eight (8) dog, watertight, steel, quick acting type door in main deck transverse bulkhead at frame 16B as shown on plans. Doors shall be U.S.C.G. approved Class 1, as manufactured by Centex, Drawing No. 14 or an approved equal. There shall be no provisions for locking watertight doors. All doors shall be labeled on both sides using engraved stainless steel plates in accordance with 46 CFR 78.47-37 (a) and (b).

2.10 WINDOWS

2.10-1 PILOT HOUSE

(a) Provide and install in Pilot House forward, aft, port and starboard bulkheads, fixed windows of size and location as shown on plans. Windows shall be 1/4" thick (minimum) laminated safety plate glass, **CLEAR**, in accordance with ANSI Z 26.1 and shall be set in self-locking rubber channels and properly sealed to prevent leakage. Pilot house glass shall have a light transmission of not less that 70%. Provide stainless steel retainer clips as required by NVIC 9-97. Clips shall be bolted in using 1/4" stainless steel bolts, flat washers, lock washers and stainless steel acorn nuts.

(b) Provide and install Cornell-Carr Drawing No. CC 1001 drop sash windows as shown on plans. Windows shall be stainless steel frame, weather tight, outside flange mounted and shall be bolted in place, on 3" centers, using 1/4" stainless steel bolts, stainless steel lock washers and stainless steel acorn nuts. Windows shall be fitted with 1/4" laminated safety plate glass, **CLEAR**, in accordance with ANSI Z 26.1.

2.10-2 PASSENGER LOUNGE

(a) Provide and install Cornell-Carr Drawing No. CC 1001 drop sash windows in Passenger Lounge as shown on plans. Windows shall be stainless steel frame, weather tight, outside flange mounted and shall be bolted in place, on 3" centers, using 1/4" stainless steel bolts, stainless steel lock washers and stainless steel acorn nuts. Windows shall be fitted with 1/4" laminated safety plate glass, **DARK TINT**.

(b) Provide and install in Passenger Lounge fixed windows as shown of plans. Windows shall be 1/4" thick laminated safety plate glass, the same **DARK TINT** as used in drop sash windows, set in self-locking rubber channels and properly sealed to prevent leakage. Provide stainless steel retainer clips as required by NVIC 9-97. Clips shall be bolted in using 1/4" stainless steel bolts, stainless steel flat washers, stainless steel lock washers and stainless steel acorn nuts.

2.10-3 WATERSHED BARS

Watershed bars of 1" x 1/4" flat bar shall be installed above all cabin windows and pilot house windows which are not protected by overhangs.

2.11 PORTLIGHTS

Provide and install four (4) portlights, two (2) in each passenger toilet as shown on plans. Portlights shall be 12" diameter weather tight, hinged, stainless steel construction, with suitable fastening bolts with wing nuts. A chain with snap hooks shall be provided for securing lights when in the open position. Glass shall be frosted. Watershed bars of 1" x 1/4" flat bar shall be installed above portlights and shall be radiused to match portlight. Portlights shall be fitted with insect screens.

2.12 HATCHES, MANHOLES AND PORTABLE PLATES

2.12-1 QUICK ACTING HATCHES

Provide and install flush deck, watertight, quick acting, 18" diameter hatches in the main deck as shown on plans. Hatches shall be Freeman Marine Model 18DI with stainless steel mechanism, inside handle and stainless steel deck ring. Hatches shall be shot blasted and coated with one coat of inorganic zinc to all steel surfaces prior to assembly.

2.12-2 BOLTED MANHOLES, MACHINERY HATCHES AND PORTABLE PLATES

Manholes, portable plates and machinery hatches shall be fitted as shown on plans. All manholes, portable plates and hatches fitted in main deck shall be flush type, fabricated from 3/8" steel pattern plate, secured with 5/8" diameter countersunk allen head 18-8 stainless steel cap screws. Provide and install four (4) Figure #20 Deck Socket Assemblies as manufactured by Railway Specialties Corp., Bristol, PA in each Engine Room Machinery Hatch.

2.12-3 ENGINE ROOM ESCAPE HATCH

Provide and install one (1) Centex, Drawing No. 32, spring balanced, quick acting, watertight hatch at frame 11A, main deck as shown on plans. Hatch shall be 24" x 24" with 3/8" x 4" coaming. Hatch shall be installed to open toward A end bow. Hatch shall have stainless steel labels identifying hatch service on both sides with arrows showing direction to rotate hand wheel to open hatch.

2.13 LADDERS, STAIRWAYS AND GRABS

(a) Incline steel ladders and stairs shall be provided for access to the engine room, passenger lounge and pilot house as shown on plans. Ladders and stairways shall be portable and secured with stainless steel fasteners.

(b) Incline steel stairways shall be fabricates from MC 10" x 8.4# channel side stringers with MC 10" x 6.5# channel treads. Provide and install Wooster Products, Inc., Super-Grip, Type 182 aluminum safety treads, 8" x 20" x 9/32" and 8" x 32" x 9/32" as shown on plans. Safety treads shall be attached by stainless steel F.H. countersunk machine screws. Aluminum safety treads shall be insulated from steel by 1/8" thick rubber gasket material.

(c) Provide and install vertical steel ladder at about frame 11A for Engine Room Escape as shown on plans.

(d) Provide and install vertical ladders for access to all voids as shown on plans. Vertical ladders shall have 3" x 3/8" flat bar side stringers spaced 15" apart and 3/4" diameter bar rungs, spaced 12" apart. Ladders shall be portable, secured with steel clips and bolts.

(e) All ladders and stairways shall be constructed in accordance with 46 CFR 72.05-20. All stairway hand rails shall be secured to vessel structure to prevent or reduce vibration as required.

2.14 LIFE SAVING AND SAFETY EQUIPMENT

The type, quantity, location and installation of life saving appliances are subject to final approval of the cognizant Officer in Charge, Marine Inspection. All Fixed, Hand Portable and Semi-Portable fire extinguishers shall be manufactured by Kidde Fenwal.

2.14-1 INFLATABLE BUOYANT APPARATUS

(a) Provide and install five (5) U.S. Coast Guard approved, Viking, fifty (5) person, Inflatable Buoyant Apparatus (IBA). IBA's shall be located on Pilot House Deck as shown on plans. Hydrostatic releases and weak links/breakaway links are not required for the vessels service area. Note: These devices may be required by the Coast Guard for the delivery trip to North Carolina.

(b) Provide and install five (5) IBA Launching Devices, M/N TMS-GL, single pedestal racks, Drawing LAP-MLG 01-2001, as manufactured by Parker Sales Inc., 10038 South Ewing Avenue, Chicago, IL 60617. Tel: 773-731-5926.

Provide and install IBA lashing straps with 4" stainless steel turnbuckles with 4" draw and stainless steel shackles to secure turnbuckles to lashings and launcher foundations. Provide and post at the launching device location the manufacturers operating instructions for the launching devices. Launching instructions shall be laminated and secured between two sealed layers of Plexiglas.

2.14-2 LIFE PERSERVERS AND RING BUOYS

(a) Provide, install and stow as required the following equipment.

(1) Three hundred ten (310) Jim Buoy M/N 601-T Adult Life Preservers

(2) Thirty five (35) Jim Buoy M/N 603-T Children's Life Preservers

(3) Six (6) Jim Buoy M/N JB-SO-30 Life Rings w/ M/N 1123-30 Life Ring Brackets

(4) Two (2) Jim Buoy M/N 1820 Man Overboard Lights complete with batteries

(b) Contractor shall stow Life Preservers in passenger exterior seating and main life preserver storage lockers on Passenger Lounge Deck as shown on plans. Contractor shall install Life Ring Brackets and Man Overboard Light Brackets in designated locations as shown on plans. Contractor shall stow Life Rings and Man Overboard Lights in designated locations as shown on plans. Final stowage locations shall be approved by the Inspector.

(c) Contractor shall provide and install on each of four (4) Life Rings stowed on the Main Deck, 100 feet of 5/16", braided, black, polyethylene rope. Rope shall be neatly coiled within the Life Ring and tied off with light breakaway cord.

Contractor shall provided and install on two (2) of the four (4) Life Rings stowed on the Main Deck, 6 feet of 5/16, braided, black, polyethylene rope with one end spliced to the Life Ring and the other end spliced to a Man Overboard Light.

(d) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all stainless steel fasteners, lashing twine, rope, etc, for a complete and operational system.

(e) Contractor shall provide ample manpower to assist U.S. Coast Guard Inspectors in performing inspections of and accounting for all Life Preservers.

(f) Provide one (1) fiberglass deck box of sufficient size to accommodate thirty (30) Jim Buoy Model 603-T Children's Life Preservers. Provide and stow in fiberglass deck box thirty (30) Jim Buoy Model 603-T Children's Life Preservers. Prior to departure of vessel from Contractors facility stow deck box with life preservers on board as directed by Inspector.

2.14-3 RESCUE BOAT AND DAVIT

(a) Provide one (1) Model 120 Open, rigid hull rescue boat as manufactured by Triumph Boats, Inc., 100 Golden Avenue, Durham, NC (919-382-3149). Boat shall be constructed, tested and labeled in accordance with 46 CFR 160.056, latest revised edition. Boat shall be equipped with center and aft seats with rowing package, one (1) pair oars and two 30 foot nylon painters properly attached to boat.

(b) Boat shall be stowed on Bridge Deck as shown on plans in a suitable cradle with quick release securing straps. Cradle shall be arranged in accordance with manufacturers recommendations and of sufficient height to allow outboard motor to remain in the normal upright position while the boat is stowed in the cradle.

(c) Provide and install one (1) outboard motor of at least five (5) horsepower. Motor shall have an integral fuel tank ONLY. Motors requiring external fuel tanks are not acceptable.

(d) Provide and install a pipe davit designed to carry the full load of the boat and motor with a 300% safety margin. Davit shall be designed to lift the rescue boat with motor in the down or running position over the top of the Pilot House hand rails without contacting the rail. Davit shall be equipped with a Gilmore-Kramer Model 4777-P5 Helical Worm Gear Drive Electric Winch w/1.2HP, TEFC, 115 VAC, 1 phase, 60 cycle electric motor with internal load brake and including a 6 foot pendant w/hand-held push button control. Winch shall be provided with high speed gearing to increase line speed. Winch shall be provided with 50 feet of 1/4" stainless steel cable with quick release hook.

(e) Provide a suitable three (3) leg lifting sling of 1/4" stainless steel cable for rescue boat. Sling shall be arranged for quick release from winch cable and shall be capable of supporting the boat in a level position when suspended from davit in a fully loaded operating condition.

(f) Provide and install a vinyl boat cover complete with securing devices/straps, color white.

2.14-4 RESCUE EQUIPMENT

(a) Contractor shall provide and stow on board vessel the following Rescue Equipment:

(1) One (1) Medevac II Litter, M/N 404-F w/flotation kit #101 installed and w/Litter Hoisting Sling M/N 193 factory installed. Stow litter as directed by the Inspector.

(2) One (1) Rescue Strop M/N 214.

Medevac II Litter and Rescue Strop shall be as supplied by Lifesaving Systems Corp. 220 Elsberry Road, Apollo Beach, FL 33572.

(b) Contractor shall provide and install one (1) Better Way Products, Inc., Model 625, Gear Storage Locker, size 71" x 22" x 24". Locker shall be installed on Pilot House Deck adjacent on "A" end. Final location shall be to the satisfaction of the Inspector.

2.14-5 DEFIBRILLATOR

Contractor shall provide and stow one (1) Lifepak 500, P/N 3011790-B Automatic External Defibrillator as manufactured by Medtronic Physio-Control, P.O. Box 97006, Redmond, WA (Tel: 425-867-4000). Unit shall be bulkhead mounted in Pilot House with final location as directed by the Inspector.

2.14-6 FIRE AXES

Contractor shall provide and install four (4) fire axes with stainless steel mounting brackets. Final locations shall be as directed by the Inspector and in accordance with 46 CFR 76.60.

2.14-7 FIRE EXTINGUISHERS-HAND PORTABLE

(a) Contractor shall provide and install U.S. Coast Guard Approved portable fire extinguishers in the following quantities and locations:

Engine Room	2	15# CO2
Each Propulsion Unit Room	1	15# CO2
Emergency Generator Room	1	15# CO2
Main Deck Bulwarks	4	15# CO2
Main Deck Superstructure	2	15# CO2

Engine Room Access Trunk	1	15# CO2
Engine Room Escape Hatch	1	15# CO2
Passenger Lounge Interior	2	2 1/2 Gallon Foam
Pilot House	1	10# ABC
Spares	6	15# CO2
Spares	1	10# ABC
Spares	1	2 1/2 Gallon Foam

All CO2 extinguishers shall be contained in Kidde Fenwal Part #290511 galvanized brackets. All ABC extinguishers shall be mounted with tension type brackets to prevent movement. All spares shall be mounted in a like manner and stowed in Void 2A in locations as directed by the Inspector.

(b) Contractor shall provide and install one (1) B-III, 35# CO2, Hose and Reel Extinguisher in Main Engine Room as shown on plans.

(c) Final locations of hand portable extinguishers shall be approved by U.S. Coast Guard Inspector.

2.15 TANKS

2.15-1 FUEL OIL TANKS

(a) Diesel fuel shall be carried in two (2) steel plate tanks of approximately 1775 gallons each. One tank shall be located in Void 2A and one tank located in Void 2B. Tanks shall be fabricated and installed as shown on plans. Tanks shall be designed, constructed, installed and tested in accordance with 46 CFR 58.50-10. Tanks shall be fitted with vents installed in accordance with 46 CFR 56.50-75 and 56.50-85.

Filling, sounding and stripping connections shall be installed. Provisions shall be made for access to tank interiors by the installation of two (2) 15" x 23" bolted, oil tight, raised coaming manholes in each tank top. Suitable ladders shall be installed on interior of tanks adjacent to bolted hatches as shown on plans.

Fuel tanks shall be piped to a manifold in engine room and other equipment as required. See Section III of piping. Provide and store one (1) sounding rod with 1" divisions and 100 gallon divisions calibrated for tank volumes. Tanks shall be full of fuel oil upon delivery of vessel to Owner.

(b) Emergency generator fuel shall be carried in a 20 gallon day tank mounted in emergency generator room as shown on plans. Vents shall be installed in accordance with 46 CFR 56.50-75 and 56.50-85. Tank shall be filled by hand pump located in engine room. See Section 3.12-9 for fuel piping systems.

2.15-2 POTABLE WATER TANK

Potable water shall be carried in one (1) steel tank of approximately 2275 gallons capacity as shown on plans. Tank shall be fitted with stainless steel vents, fills, drains and a 12" x 23" watertight, raised coaming manhole in top of tank.

Tank shall be prepared and coated in accordance with Section V of these specifications. For piping systems, see Section III.

2.15-3 LUBE OIL STORAGE TANK

(a) Contractor shall provide and install one (1) 110 gallon steel lube oil storage tank in Engine Room as shown on plans. Tank shall be complete with fill to main deck, vent, draw-off and guarded sight glass liquid level gage.

Tank shall be mounted on foundations of sufficient height to facilitate filling a two gallon oil pot. A raised coaming, 15" x 23", bolted plate man hole shall be installed in tank top for cleaning and inspection.

(b) Provide and install a sheet metal drip pan of sufficient size to accommodate a two gallon oil pot under draw-off valve. Tank shall be full of engine manufacturer's recommended lube oil upon vessel delivery.

(c) Provide one (1) commercial grade two gallon oil pot and store as directed by Inspector.

2.15-4 TANK CLEANING

(a) All fuel and lubrication oil tanks shall be thoroughly cleaned of all debris, weld splatter, flux and other foreign matter and be approved by the Inspector prior to initial filling and shall be kept closed thereafter until ready for use.

(b) Potable water tank shall be prepared and coated in accordance with Section V of these Specifications. Upon completion of installation the water tank and piping systems shall be disinfected and tested in accordance with local or U.S. Health Department procedures. Provide the Inspector with three copies of test reports.

2.16 INSULATION

(a) All insulation shall be compact type fiberglass hull board with cloth face, except in engineer's control station, and shall be installed on welded pins. Pin spacing shall be a minimum four (4) per 21" x 36" insulation panel and spaced 8" to 10" from corner of board, secured with cap type self-locking washers so that no pins are exposed.

Insulation shall be installed in spaces as follows and as shown on plans:

(1) Install 1" thick cloth faced fiberglass insulation around all transverse frames, deep webs, longitudinal girders and underside of main deck and 12" down hull between frames 12A and 28A and 12B and 28B.

(2) Install 2" thick cloth faced fiberglass insulation around all transverse frames, deep webs, longitudinal girders, underside of main deck and 12" down hull between frames 12A and 12B except in way of structural fire protection boundaries.

(3) Install 2" thick, cloth faced fiberglass with lead septum, acoustical insulation in Engineer's Operating Station on underside of main deck and interior bulkhead surfaces. Insulation shall be sheathed with factory finished perforated, 18 gage, white sheet metal on all bulkheads and overhead. Butts and seams in perforated metal shall be covered with matching metal trim. Install 3" thick, cloth faced, fiberglass with lead septum, acoustical insulation below deck plating. Insulation shall be supported on galvanized sheet metal channels as required.

(4) PILOT HOUSE – 2" cloth faced fiberglass on overhead, bulkheads and interior of consoles. Area below raised deck plates shall comply with Structural Fire Protection Insulation requirements.

(5) PASSENGER LOUNGE – 2" cloth faced fiberglass on overhead and bulkheads. Area in way of Pilot House shall be insulated in accordance with Structural Fire Protection Insulation requirements.

(6) PASSENGER TOILETS – 2" cloth faced fiberglass on overhead and bulkheads.

(7) ENGINE ROOM ACCESS TRUNK – 2" cloth faced fiber glass on bulkheads. Overhead shall comply with Structural Fire Protection Insulation requirements.

(8) EMERGENCY GENERATOR ROOM – 2" cloth faced fiberglass on bulkheads and stiffeners. Overhead shall comply with Structural Fire Protection Insulation requirements.

All seams of cloth backed insulation shall be covered with glass tape so as to present a smooth, wrinkle free surface. Coat all exposed cloth backed insulation with vapor-barrier sealer after installation and prior to bulkhead liner installation and/or paint application.

2.17 STRUCTURAL FIRE INSULATION

(a) Structural Fire Protection Insulation shall be installed in Emergency Generator Room, Engine Room Access Trunk, Engine Room Ventilation Supply Trunk, Engine Room Overhead, Bulkhead 12 A, Passenger Lounge and Pilot House as shown on plans.

(b) Structural Fire Protection Insulation shall comply with U.S. Coast Guard Standard Fire Test 46 CFR 164.007.

(c) All insulation shall be cloth faced and taped and shall be free of all sharp corners from insulation fasteners. All insulation shall be installed on welded pins with cap-type self locking washers.

2.18 DECK COVERING

(a) Deck covering in Pilot House shall be 12" x 12" vinyl tile installed over aluminum deck plates. Tile shall be "framed" with 1 1/4" x 1/8" aluminum flat bar at all perimeters of deck plate sections. (See Section 2.4-21) Tile shall be Imperial Excelon as manufactured by Armstrong. Tile color shall be "Sand Drift White, #51858".

(b) Deck covering in Passenger Cabin shall be 50cm x 50cm resilient tile. Tile shall be Norament 825 (Round) and Norament 825 (Hammered surface), as manufactured by Freudenberg Building Systems, Inc. (1-800-332-6672)

Tile color shall be selected after contract award. Norament 825 (Round), 100cm wide, shall be used in traffic areas between doors at "A" & "B" ends of Passenger Lounge. Norament 825 (Hammerblow) shall be used in all remaining areas. Decks shall be leveled with an approved underlayment. Resilient tile system shall be installed in accordance with manufacturer's recommendations.

2.19 JOINER SYSTEM

(a) Bulkhead and ceiling liners shall be installed, using self-tapping screws with cup washes on all exposed framing and smooth metal surfaces in Passenger Lounge, Toilets and Pilot House. Installation shall comply with all applicable sections of NVIC 9-97.

(b) Bulkhead and ceiling liner material and trim shall be as manufactured by Ralph Wilson Plastics Co., 552 Garden Oaks, Houston, TX 77018. Panels shall be a **MINIMUM .063"** thick aluminum with incombustible, high pressure plastic laminate applied to exposed sides.

(c) Panels shall be installed in strict accordance with manufacturer's recommended procedures and shall be complete in all respects including but not limited to deck channels, ceiling channels, "H" posts, bulkhead liner supports and all necessary trim and molding. Install a 4" x 1/4" flat bar coaming around the perimeter of all decks seal welded to decks. Install a 4" vinyl base cove molding around all bulkheads. Panels shall be pre-finished at factory and installed in the following locations and color schemes:

BULKHEAD PANELS

PILOT HOUSE	NEPAL TEAK	7209-13
PASSENGER LOUNGE	NEPAL TEAK	7209-13
TOILETS	ANTIQUE WHITE	1572-6

NOTE: The lower 48 inches of Toilet Bulkheads shall be finished with 18 gage hospital grade stainless steel panels. Special care shall be exercised to protect these surfaces until vessel delivery.

CEILLING PANELS

ALL AREAS ANTIQUE WHITE 1572-6

(d) Removable (portable) panels shall be installed in areas concealing piping and electrical system wiring. Access panels in Pilot House Consoles shall be finished with matching bulkhead liner laminate material. Pilot House air conditioning units shall be boxed in using bulkhead liner panels and trim and shall be designed for easy removal for maintenance of air conditioning equipment.

(e) All windows and port lights shall be boxed in or finished in accordance with manufacturer's recommendations. All exposed metal including but not limited to doors, frames, etc., shall be painted in accordance with Section 5.3-5 of these specifications.

(f) Butts and seams in all panels shall be covered with decorative trim. Where uneven structural plates or shapes exist, galvanized cribbing material shall be installed to permit smooth even installation of all joiner panels.

(g) Install Armstrong A, Armaflex Insulation Tape (TAP 18230) or an approved equal between all panels and frames. Duct tape is not acceptable.

2.20 FURNISHINGS

2.20-1 PILOT HOUSE

(a) Provide and install furniture as follows:

1. One desk, HON Single Pedestal, 48" x 30", No. P3251 RML.

2. One metal chair, HON No. HN-4003AB 10T or equal.

3. One copy of "Pilot Rules", frames under glass and mounted.

4. One copy of Coast Guard Form 802.

5. One Chelsea Marine Clock, non-striking, 6" dial, eight day jeweled movement in polished brass case with wood base for bulkhead mounting.

6. One Chelsea Marine Barometer, 6" dial, with polished brass case with wood base for bulkhead mounting.

7. Two Timco Industries, Inc. Pilot Chairs, Model ELR, with five leg base complete with foot rests and flat nylon glides. Height shall be 37" to seat.

8. Two Danforth M/N C627G, bracket mount, Magnetic Compasses with 5" cards, with dimmer controlled binnacle lights. Calibrate compasses during sea trials. Provide and install framed deviation cards at each compass. Provide twelve spare binnacle lamps.

9. One wooden frame life preserver storage rack suitable for storage of two adult preservers to be mounted in overhead as directed by the Inspector.

2.20-2 PASSENGER LOUNGE

(a) Provide and install ten (10) Model 10500-3 three seat units. Eight units shall be fitted with right end arm rests, and two units shall be fitted with left end arm rests. Seats shall be provided with powder coated aluminum pedestals and unpadded powder coated aluminum grab rails as manufactures by Glen Eagle Furniture, Inc., 228 Crawford Road, Statesville, NC (704-873-3244). Grab rails shall be installed on same side of seats as arm rests. Seats shall be located as shown on plans and shall be attached to the deck with stainless steel studs welded to deck and

secured with stainless steel flat washers, stainless steel lock washers and stainless steel acorn nuts. Upholstery shall be transit grade, flame retardant vinyl and foam. Seat covers shall be Naugahyde, Phoenix #PH 59 Almond. Provide three spare back and bottom seat covers. All seat back covers shall be embossed with Ferry Division Logo including spare back covers.

NOTE: FABRIC AND FOAM SHALL BE U.S.C.G. APPROVED

(b) Contractor shall provide and install two (2) rectangular Model 2454, 50" long, 24" wide, 29" high tables as supplied by Glen Eagle Furniture, Inc. Table tops shall be provided with Custom Wilson Art Laminate, Pattern: Custom Graphics "Potters River Square".

(c) Provide and stow one (1) United Receptacle, No. H9-R1536EGL-PY trash receptacle with self-closing steel door and galvanized steel inner liner. Color Tan.

(d) Provide and install one (1) Officer's License Frame, suitable to display six (6) licenses, as manufactured by Glen Eagle Furniture, Inc. Final location shall be as directed by the Inspector.

(e) Provide and install one (1) Bulletin board, 28" x 42" with satin chrome finish and tempered glass front as manufactured by Glen Eagle Furniture, Inc. Final location shall be as directed by the Inspector.

2.20-3 PASSENGER TOILETS

Each passenger toilet shall be fitted with necessary handrails about 30" to 36" long, as shown on plans. Handrails shall be stainless steel, securely attached to the vessel structure and not just to joiner panels.

2.21 MASTS (HINGED TWO (2) EACH)

(a) Masts construction shall be of aluminum tubing, plate and shapes fabricated and installed as shown on plans. Mast base/foundation shall be stainless steel structural tubing as shown on plans. Masts shall be arranged to provide foundations for navigation lights. Upper section of masts shall be hinged and counter weighted to rotate masts for access to navigation lights. Counter weights shall be installed inside mast structure.

(b) Provide stainless steel securing devices as required.

(c) Provide brass pulleys for each arm and gaff and three flag halyards of 1/4" nylon line with brass snap hooks secured to each end of halyard one each mast. Halyards shall be endless loop type. Provide brass halyard cleats on mast bases to secure halyards.

2.22 FASTENERS AND HARDWARE

Fasteners, in general, shall be 18-8 stainless steel unless otherwise specified, and in accordance with sizes required or shown on plans and listed elsewhere in these specifications.

All hardware shall be made of the best quality marine grade brass or bronze unless otherwise specified. Bolts shall be fitted with lock washers, flat washers and nuts. Nuts shall be drawn up tight. Screws shall be of highest quality stainless steel with clean cut threads. All threads shall be coated with non-seizing compound prior to installation.

2.23 WATER COOLERS – PASSENGER LOUNGE AND ENGINE ROOM

(a) Provide and install in the Passenger Lounge, one (1) free-standing water cooler, Halsey Taylor Model SCWT-14A or the most current comparable model. Provide aluminum or stainless steel brackets to secure unit to bulkhead.

(b) Provide and install in the Engine Room, one (1) combination water cooler, Oasis Model DP3-RH or the most current comparable model. Provide aluminum or stainless steel brackets to secure unit to bulkhead and/or deck plate.

2.24 ENGINEER'S OPERATING STATION AND ENGINEER'S ACCESS TRUNK

(a) An Engineer's Operating Station shall be installed from frame 4B to 8B as shown on plans.

(b) Bulkheads shall be constructed of minimum 7.65# plate with 2" x 2" x 1/4" angle stiffeners, spaced as required, placed on bulkheads as shown on plans. Aluminum deck plating shall be at the same level as engine room deck plating and shall have sound dampening material installed on underside. See Section 2.16 (a) (3).

(c) Provide and install double pane 1/4" safety plate glass in E.O.S. as shown on plans. Glass shall be installed with 2" air space between panes. Glass shall be set in self-locking rubber channel and shall provide maximum visibility of engine room space.

(d) Fabricate and install Engineer's Console approximately 63" long, 33" high and 29" wide, constructed of 7.65# plate. Console shall be configured with one (1) large portable door with positive latches to provide access to interior of console. Lower sill of door frame shall be portable and constructed in such a way that it can be easily removed to present a smooth flat transition from the deck plate in the E.O.S. to the plate inside the console bottom. Console shall be arranged for installation of engine throttle controls, air gage, main engine tachometers, engineer's alarm panels, Voith "0" pitch indicator lamps, sound powered telephone and other equipment as required.

(e) Provide and install one (1) HON 34002 RML steel desk, one (1) letter size, four drawer, non-locking file cabinet, One (1) HON 532E3BK metal frame black vinyl chair with arms and One (1) HON 531E3BK metal frame black vinyl chair without arms. Provide and install one (1) wooden frame life preserver storage rack suitable to store two adult life preservers in overhead as directed by the Inspector.

(f) Provide and install in the E.O.S., one (1) Chelsea Marine Clock, non-striking, 6" dial, eight day jeweled movement in polished brass case with wood base for bulkhead mounting. Location as directed by the Inspector.

(g) Fabricate engine room access trunk from frame 10B to 16B, as shown on plans. The access trunk shall be constructed of 12.75# plate with inverted angle stiffeners, size as required, attached to exterior of bulkheads. Deck (landing) shall be of 15.3# plate with necessary stiffeners. Provide flat bar coaming in way of stairway deck cut. Provide pipe hand rail at main deck level. Entire engine room access trunk shall be watertight. Install watertight door in accordance with item 2.9-6. Fabricate and install stairway in access trunk as shown on plans.

2.25 NAVIGATION AIDS AND SIGNALS

2.25-1 WHISTLE AND FOG HORN

(a) Provide and install one (1) Kahlenberg Figure 213 bi-directional Air Horn, two (2) Kahlenberg Drawing #2-1763 Bronze Whistle Pulls, two (2) Kahlenberg Figure V-152L Solenoid/Manual Valves (110VAC), one (1) Figure M-100, 1/2" NPT Air Strainer and Moisture Separator and two (2) Figure M-511 (110VAC) Fog Signal Timers.

(b) Air horn shall be mounted on Pilot House top and shall have one projector directed forward and one projector directed aft. Bronze Whistle Pulls and Solenoid/Manual Valves shall be installed in Pilot House overhead located to allow easy access by the operator from each control console. Fog Signal Timers shall be located in top of Pilot House Consoles. Air Strainer shall be mounted inside Pilot House Console on "A" end and drain shall be piped to outside of Pilot House.

(c) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all foundations, metal grounds for Whistle Pulls, air supply piping from Engine Room to Pilot House, cables, pulleys, wiring, fasteners, tubing, fittings, etc. for a complete and operational system. Terminations of cable pulls from manual valves to whistle pulls shall be made up with stainless steel cable and stainless steel cable swages designed for the size cable used, secured using the approved crimping tools.

2.25-2 SHIPS BELL

Provide and install one (1) Perko Figure 158, brass Ship's Bell of 300 mm diameter complete with mounting bracket. Bell shall be mounted on "A" end of Pilot House transverse bulkhead below window. Engrave vessel's name and year built on exterior of bell.

2.26 ENGINE ROOM WORKBENCH AND FLAMABLE STORAGE LOCKER

(a) Provide and install one (1) Grizzly Model C-2448 K workbench with locking handle as supplied by Pucel Enterprises, Inc., Cleveland, Ohio in location as shown on plans. Workbench shall be securely bolted to aluminum deck plates. Provide and install one (1) 6" commercial grade vice bolted to top of workbench.

(b) Provide and install one (1) flammable liquid storage cabinet, McMaster-Carr catalog #9974T53 or equal. Provide adequate foundations and install unit at approximately frame 6A Port side, immediately outboard of 11'-3" longitudinal. Final location and arrangement shall be to the satisfaction of the Inspector.

(c) Provide and stow in the Engine Room, one (1) 21 gallon, steel, oily waste can, McMaster-Carr catalog #4074T35 or equal.

2.27 PILOT HOUSE CONSOLES

(a) Provide and install a console in each end of Pilot House as shown on plans.

(b) Console shall be totally enclosed fabricated or manufactured of steel with suitable stiffeners to support equipment installation. Removable panels shall be installed to provide interior access. Door bottom sills shall be portable or removable. Provide aluminum bottom and back plates inside consoles to facilitate mounting of equipment.

(c) Equipment and instruments listed elsewhere in these specifications shall be installed in consoles to provide complete and operational control centers.

2.28 PADEYES

Provide and install padeyes over main engines, turbo couplings, generators, generator engines and for the length of the propulsion shaft lines on A and B ends of vessel. For the purpose of these specifications the installation shall include a minimum 48 units. Padeyes shall be securely welded to ships structure including any additional stiffeners required to support the anticipated loads. Padeyes shall be designed with large eyes to facilitate the use of chain hoist hooks. Padeyes shall have radiused corners and be of a neat clean design. Final location of all padeyes shall be to the satisfaction of the Inspector.

2.29 FIXED LEAD BALLAST

(a) Contractor shall calculate the required amount of fixed ballast necessary to produce a lightship heel and trim condition of ZERO degrees with all consumables and stores and all rigging, trim and equipment onboard. Preliminary calculations indicate approximately twenty (20) long tons of ballast with a transverse center of gravity at 19' off centerline will be required.

(b) Contractor shall provide and install fixed ballast in the form of Pig Lead of approximately 59 pounds per pig with a dimension of approximately 3" x 4" x 12". Pigs shall be rectangular in shape, free from any protrusions, knuckles or indentions to allow for tight stacking with a minimum open area between pigs and/or vessel structure.

(c) Contractor shall develop drawings for ballast trays centered around frame "0" and frame 29A and 29B. The maximum amount of ballast possible shall be carried in the ballast tray at frame "0". Additional ballast shall be installed at frames 29A and 29B to produce the desired ZERO heel and trim condition.

(d) All fixed lead ballast shall be supported on adequate foundations to carry the loads and shall be restrained against movement under conditions of pitch and roll which could be expected for vessels in service on partially protected waters.

(e) All surfaces of fixed lead ballast shall be coated with one (1) coat of Devran 229, white, PRIOR to installation of ballast in vessel.

2.30 STORAGE LOCKERS

(a) Provide and install three (3), No. 1091, Lyon Metal Products, Inc., storage cabinets and three (3) No. 1099 Lyon Metal Products, Inc., combination cabinets in Void 2A arranged as shown on plans. Cabinets shall be secured to aluminum deck plate. Provide angle brackets between stanchions and/or bulkhead stiffeners and secure backs of cabinets to stiffeners. Cabinet color shall be Dove Gray. Care shall be taken to ensure there is adequate vertical clearance between deck plating and insulated overhead structure to permit cabinet installation.

(b) Provide and install one (1), No. 5102, Lyon Metal Products, Inc., storage cabinet on port side forward end of Engine Room access trunk at frame 11B. Secure cabinet to hand rails and deck as required. Cabinet color shall be Dove Gray.

2.31 PILOT HOUSE WINDOW SHADES

(a) Provide and install window shades on windows located in Pilot House longitudinal bulkheads and door.

(b) Shades shall be Solar Screen Kool Vue window shades fabricated from DuPont's Mylar polyester film. Shade pattern is smoke/smoke 4.5 gage material consisting of two layers of smoke Mylar and one layer of silver in the middle. Shades shall be manufactured to reject 73 percent of all solar energy.

(c) Provide and install all mounting hardware including metal clips at bottom of windows to restrain movement while shade is covering window. Shades shall be arranged for manual roll up/roll down.

2.32 PASSENGER DECK EXTERIOR SEATS

(a) Provide and install bench seating (four units) on open passenger deck, starboard side against passenger lounge longitudinal bulkhead as shown on plans. Seats shall be constructed of aluminum and designed to provide storage of life preservers. Seats shall be designed to accommodate 30 Jim Buoy Model 601-T adult preservers in each of the four units. Internal baffles used for structural support shall be spaced to accommodate six preservers in each segment. All internal and external structural surfaces shall be free of burrs, sharp edges or rough surfaces which might injure passengers or damage life preservers during installation or removal of preservers. Seats shall be arranged for easy access to life preservers by hinging the seat bottom with backs not moving. Hinges shall be heavy duty stainless steel piano type installed for the length of the seat. Seat units shall be mounted to the deck with stainless steel welded studs, s/s lock washers, s/s flat washers and s/s acorn nuts. Seat foundations shall not extend beyond line of seat bottoms or sides and seats shall be installed with no more that one inch spacing between seat backs and bulkhead.

(b) Seat bottoms shall be designed to prevent entrance of water into the life preserver compartments. Provide positive hooking or latching devices to hold the bottom hinged seat segment in the open position to allow unobstructed removal of preservers. Provide stainless steel ventilation grills in each seat.

(c) Contractor shall provide arrangement and detailed drawings for seating in accordance with Section 1.10 and 1.11 and submit to owner for review prior to commencement of fabrication of seats.

2.33 RESCUE LADDER

(a) Contractor shall develop detailed construction drawings for an aluminum rescue ladder, which shall be recessed into the starboard bulwarks between frames 12A and 14A. Ladder shall be arranged to hinge down from the main deck and be of sufficient length that at least two rungs of the ladder are submerged when the ladder is in the down position. The ladder shall be arranged so that it will hinge up in a stowed position into a recess in the bulwark and fashion plate and will not extend beyond the molded line of the main deck when in the up or stowed position.

(b) The recessed area of the bulwark shall be provided with foot hole cut outs to act as steps to allow personnel to gain access to the ladder over the top of the bulwarks. Provide hand grabs as required for assistance in negotiating the recessed area of the bulwark.

(c) Provide sufficient 1/4" nylon rope attached to the bottom of the ladder to allow retrieval of the ladder from the deployed or down position. Provide positive means for retaining the ladder in the up or stowed position. The ladder shall not extend more than 85 degrees from the vertical when in the down or deployed position.

(d) The ladder shall be fabricated from extra heavy aluminum pipe with rails spaced at least 18" apart. Ladder rungs shall be of sturdy construction with built in non-skid surfaces similar to swimming pool ladder steps.

2.34 GEAR STORAGE LOCKERS

(a) Fabricate and install two (2) gear storage lockers, approximately 18" deep x 24" wide x 7'-6" high, on the passenger deck adjacent to the life preserver storage lockers. Lockers shall be fabricated from 7.65# plate and flat bar stiffeners as required and shall be incorporated into vessel structure.

(b) Provide and install, in each locker, one (1) eighteen inch clear opening, Cornell-Carr style CC2004-A, weather tight, exterior surface mounted, joiner door. Doors, frames and sills shall be aluminum. Doors shall be fitted with stainless steel hinges and stainless steel lever type lock sets.

(c) Provide limber holes in bottom of bulkheads at low points of deck to allow drainage of water from lockers. Provide and install stainless steel louvers in bulkheads for ventilation of lockers.

2.35 CATHODIC PROTECTION SYSTEM

(a) Contractor shall develop a Cathodic Protection System using standard, weld on type 6" x 12" zinc anodes. System shall be designed to protect the hull of the vessel for a period of at least three years without specific maintenance to the system.

(b) System shall be designed to provide maximum coverage of the entire surface of the vessel below the 5'-6" waterline and shall take into consideration all keel cooler and transducers which might influence the performance of the system. Zinc anodes shall not be placed where they may interfere with the blocking of the vessel during drydockings.

SECTION III

CONSTRUCTION SPECIFICATIONS

PROJECT WBS 34132.1.6

3.0 MACHINERY AND PIPING

3.1 MACHINERY

(a) Materials for the component parts of machinery and equipment shall be as specified in the individual paragraphs of the specifications and/or as noted on the plans. Materials for machinery and equipment shall, unless otherwise approved by the Owner, conform to the applicable requirements of the current issue of 46 CFR Subchapter F, Marine Engineering Regulations.

(b) Contractor shall fabricate and install all necessary foundations and supporting structure, and the cost thereof shall be included as a part of the cost of the respective work items. Foundations shall be fabricated of structural steel plates and shapes to the dimensions required for satisfactory support. They shall ensure rigidity, freedom from vibration in normal operation and secure containment of the equipment in rough seas and crash stops (accelerations of at least 1.0g in any direction). Flat bars shall be welded around the edges of top plates where they are necessary to retain possible leakage of oil or water and drain plugs shall be provided to permit release of all drainage. Foundations shall extend a sufficient distance to distribute the load and to avoid excessive weight concentrations. Doublers or insert plates, girders, headers and stanchions shall be fitted and under deck framing shall be otherwise reinforced to provide adequate support of the equipment. Top members of foundation girders shall be machined as necessary and drilled to suit the equipment base structure.

Chocks and/or liners shall be fitted, machined as necessary to produce and maintain correct alignment and to permit adjustment of alignment.

(c) Shafting systems shall be aligned with the engine so that the tolerance is no greater than 0.003" from true when the vessel is afloat. Shafts and couplings shall be balanced statically and dynamically to ensure vibration free operation.

(d) Templates, gages and jigs required for the proper machining and assembly of components and furnished by the Contractor shall become the property of the Owner at the conclusion of the work. Templates shall be made of 3/8" steel plate fitted with not less than two removable hardened steel drilling guide bushings for drilling flange holes and other drilling in the components. All such items shall be accurately and substantially made in a manner to retain their accuracy under repeated use and with proper care and handling. At the completion of the work all patters, templates, jigs and gages shall be cleaned and all metal parts given a suitable coating of anti-corrosive grease. The equipment shall then be delivered in first class condition to the Owner. A tag containing the name of the equipment and the purpose of the template, etc., shall be attached securely to the item.

3.2 PIPING

(a) All piping shall be as set forth below and elsewhere in these specifications and shall be arranged to obtain optimum operating conditions and shall be compatible with the machinery or equipment served. All piping, valves and fittings shall comply with the Material Specifications of the U.S. Coast Guard.

(b) Piping shall be led as directly as practicable. Piping shall include valves, unions and fittings necessary to isolate any piece of equipment for repairs without disrupting the entire system. Unions and flanges shall be used to facilitate installation and subsequent replacement with minimum labor and materials. Flexible connections to machinery components, where vibration may be encountered, shall be used. Piping shall be kept clear of switchgear and wiring insofar as practicable.

(c) Piping shall be secured by supports and hangers so as to avoid excessive strains, avoid the weight of the piping being transmitted to valves and fittings, minimize the effects of vibrations, shock, pitching and rolling of the vessel consistent with the kind of service in which the vessel will be normally exposed. Piping shall be supported to permit proper thermal expansion and contraction by changes in direction of pipe runs or by use of expansion bends, joints, loops or offsets. Hangers for copper pipe shall be fitted with molded rubber or nylon.

(d) To minimize galvanic corrosion, valves and fittings in sea water lines shall be of the same composition as adjacent piping, unless otherwise specified in individual work items. Where joining of dissimilar metal piping cannot be practicably avoided, 12" long steel waster pieces shall be installed adjacent to nonferrous valves or fittings.

(e) Galvanizing destroyed by welding or other activity shall be replaced. Where welding destroys the galvanizing not more than 6" from the end of the pipe, the method of replacing galvanizing shall be similar and equal to "Galvweld" on piping 3" and above or "Galvicon" on piping 2 1/2" and below. All steel piping, regardless of size, shall be hot dipped galvanized when welding or other activity is such that galvanizing is destroyed more than 6" from the ends of a pipe section.

(f) Joints for steel piping shall be screwed for size 2" and below and flanged for sized 2 1/2" and above, except hydraulic, vent and sounding pipes. Vent and sounding pipes shall be welded for all sizes. Hydraulic piping at each directional control valve and hydraulic cylinder shall be screwed, all piping joints shall be of the flared, bite or compression type in accordance with J.I.C. Standards. All burrs shall be removed from the ends of all piping after all cutting and/or threading. Pipe ends shall be dressed with a reamer before installation.

(g) Where not otherwise specified, valves shall be of the flanged or union nut bonnet type. Materials shall be corrosion resistant for the service conditions to which they may be subjected. Valves shall be of the rising stem type. Where three or more valves are located together for the same service they shall be combined into a manifold. Shutoff valves shall be provided in fuel supply lines, one as close to each tank as practicable, and one as close to each fuel pump as practicable. A brass plate secured by the handwheel nut shall be attached to the handwheel of each valve and inscribed to indicate its function. Valves shall be readily accessible. Where the installation conditions do not permit ready access to valves reach rods shall be provided.

(h) All valves are to be installed to close against the pressure.

(i) Where pipes are carried through watertight bulkheads, decks or tank tops the watertight integrity of the structure shall be maintained. Heat sensitive materials shall not be used in piping systems, which penetrate watertight sub-divisions where deterioration of such materials would, in the event of fire, impair the watertight integrity of the sub-divisions. Hydraulic steel tubing and all copper tubing shall penetrate watertight bulkheads and decks using U.S. Coast Guard Approved penetrations and materials.

Where overboard discharge lines or valves are attached to the inside of the hull, the hull shall be reinforced by a doubler plate, to maintain the original strength and integrity. Piping systems shall be designed in accordance with 46 CFR 56.50.

(j) All fasteners used to connect valves to sea chests shall be stainless steel.

(k) All vent, fill and discharge pipes that pass through the side shell or main deck plate shall be stainless steel from the penetration outboard for the entire length.

(l) All piping shall be identified by stenciling the system service name on the pipe and/or pipe cover. Abbreviations may be used. Sufficient identification shall be applied to permit pipe tracing within a compartment and outside of a compartment when piping penetrates bulkheads or decks. Piping 1" or smaller may be identified with embossed metal label plates, properly inscribed and wired to the piping.

(m) All piping, piping appurtenances and applicable equipment shall be thoroughly cleaned after fabrication and prior to shipboard installation. After complete shipboard installation each system shall be thoroughly cleaned and flushed of all foreign matter with the applicable system's medium or an approved substitute. System flushing shall be conducted at the applicable system's maximum operating pressure and where practicable, above the normal line velocity. However, prior to flushing operations, items having in line mechanisms capable of trapping or being affected by the carry over of foreign matter shall be either removed or blanked off and bypassed. Flushing of the piping systems shall be witnessed by the Inspector and performed to his satisfaction.

(n) All piping shall be insulated as necessary to prevent sweating or transfer of heat.

(o) Reducing valves and all other pressure and flow control devices shall be provided with a strainer at the inlet, a relief valve and a pressure gage in the discharge side and a valved bypass.

(p) Threaded joints in pipes shall be reamed after cutting and threading. Fittings shall be free from fins and burrs. Joints shall be made with approved pipe joint compound applied to male threads only and all exposed threads on pipes mopped to prevent rust. Threads shall be full cut. Pipes shall not have more than three (3) exposed threads after joints are made up tight.

(q) Flanged joints shall be fitted and made up with suitable gaskets and **bolts** only. Bolts shall be fitted with flat washers and lock washers. Bolts shall be sized so that one thread but not more than three threads extend beyond nuts when the bolt is drawn up tight. Bolts with lock washes shall be used in both sides of Category A threaded lug type butterfly valves. Studs or all thread rods shall not be permitted in the connection of any flanged connection.

3.3 ENGINE INSTALLATION, MAIN AND AUXILIARY (See Sections 6.9 and 6.20)

The engine installation shown is for the purpose of giving the requirements for the successful operation of the vessel. Contractor shall guarantee, in writing, "next day" service in the Hatteras, NC area for all engines.

The main and auxiliary diesel engines and generators shall be guaranteed by the manufacturer for a period of not less than twelve (12) months. The guarantee period shall begin **from the date the vessel is delivered to the Owner in Hatteras, NC.**

3.4 MAIN ENGINES (See Sections 6.9 and 6.20)

(a) Provide and install two (2) main propulsion engines of the latest series production model and type. Engines shall be Caterpillar 3412D, DITA "A" Rated, 542 BHP @ 1800 RPM, CCW rotation and arranged for keel cooling with Twin Disc MG-5202 SC – 2.92:1, SAE 0 housing, 24 VDC electric solenoid actuated marine gears. Engines shall be provided with all attached and unattached equipment needed for a complete operational installation, including but not limited to all Standard Equipment and Accessories and the following Optional Equipment:

a. Left Hand configuration on both engines for instrument panel mounting.

b. Walker AirSep crankcase fumes recirculating system, latest production model.

c. Duplex oil and fuel filters.

d. Electric starting motor, 24 VDC with positive detent rotary starter switch with off/run/start positions. Keyed starter switches are not acceptable.

e. Jacket water level switch gage wired to custom junction box.

f. Dry charge coolant conditioner system installed on engine.

g. Exhaust gas pyrometer

h. Local manual engine throttle control, lever type.

i. Custom engine mounted junction box including wiring for the following alarms; low oil pressure, high water temperature, low water level, high oil temperature, high differential pressure across oil filters and engine overspeed. Alarm switches shall be provided which are independent of any other alarm function of the engine and shall be of the normally closed (when engine is operating) type.

All necessary relays shall be provided within the junction box to facilitate interface with the engineer's alarm panel that operates on 24 VDC. All wiring shall terminate on clearly marked terminal strips and be provided with a permanently mounted wiring diagram on the inside cover of the junction box. Provide three additional copies of wiring diagram to the Inspector.

j. Custom Parker Hannifin rotary valve to allow low oil pressure alarm verification while engine is operating.

k. Premium 12 hole engine mounted instrument panel included with electric digital tachometer, oil and fuel pressure, pyrometer, water and oil temperature, air inlet temperature, marine gear oil pressure and temperature gauges. Installation shall include any and all required custom wiring harness.

l. Exhaust flex, 8" diameter x 12" length with 8 bolt hole floating type flanges on each end.

m. Four each Parts, Service and Operation Manuals.

n. Manual jacking gear.

o. Authorized Dealer start-up, PAR test and one day training session.

(b) Contractor shall install main engines as shown on plans. Contractor shall provide all required fasteners, wiring, fuel oil flex hoses, exhaust system flex connections, all piping, insulation, bedding materials, guards, gaskets, fittings, starter lockout interface with Voith Units, etc., for a complete and operational installation.

(c) Contractor shall provide and install six (6) lighted tachometers (digital) with dimmer controls, two (2) mounted in Engineer's Control Console, and two (2) mounted in each Pilot House Console.

(d) Contractor shall fill engines with a mixture of fresh water and Caterpillar water treatment product. Amount of water treatment added shall be to the manufacturer's recommendation for type and size of engines. Provide one (1) Caterpillar water treatment test kit.

(e) Contractor shall provide the services of a Caterpillar authorized technician to accomplish initial start up of main engines including verification of alarm systems interfaces. Caterpillar Test Reports of initial start up shall be provided to the Inspector.

(f) Contractor shall provide the services of a Caterpillar authorized technician to accomplish a PAR test on both main engines. Provide Inspector with three (3) copies of each engines PAR test reports and forms.

(g) Contractor shall acquire from the Manufacturer a certified statement that main engines were manufactured in accordance with the Caterpillar Works Approval Program or in lieu of the certified statement provide all required A.B.S. Certifications for both main engines.

3.5 PROPULSION UNITS, INSTALLATION AND CONTROL

3.5-1 PROPULSION UNITS (See Section 6.20)

(a) Provide and install two (2) Voith Schneider, Size 16 R5/120-1 single stage cycloidal propulsion units with 1000 mm length blades as manufactured by J.M. Voith GmbH, Heidenheim, Germany.

(b) Units shall be rated for 470 kW with an input speed between 600 and 620 RPM's and shall be configured to accept CW input shaft rotation from the main engine reduction gears.

(c) Propulsion units shall be inspected and certified by the A.B.S. Three (3) copies of each certificate shall be provided to the Inspector.

3.5-2 PROPULSION UNIT INSTALLATION (See Section 6.20)

(a) Contractor shall install propulsion units, propulsion unit oil systems, reduction gearboxes with clutch, Bow tooth couplings for shaft to gearbox connection and shaft to propeller connection, instrumentation, alarms, "0" pitch position indicators in EOS Console, "0" pitch override switches for main engine starting, vents, guards, and all other fixtures, hardware, wiring, equipment, lubricants, foundations and labeling necessary for a complete operational system in accordance with manufacturer's procedures, drawings and installation manuals. Contractor shall provide the services of a manufacturer's technical representative to witness and accept the installation of the units, accomplish initial start up and accomplish sea trials of the units in accordance with Manufacturers Recommendations and Requirements.

(b) Contractor shall provide and install foundations of structural shapes and plate as shown on plans.

3.5-3 PROPULSION CONTROL SYSTEM

(a) Provide and install a control system for Voith Propellers as shown on plans. Installation shall consist of all wiring, cable, foundations, hardware, etc., for a complete operational system as shown on plans.

(b) Control system shall be supplied by Voith. System shall be Bosch/Rexroth Marex OS consisting of electronic duplex controls for the control of two Voith propellers from two control stands. Control systems shall be installed in each Pilot House Console. Control system shall be in accordance with all requirements of all applicable sections of Title 46 CFR 58.01-35, 58.25, 77.05, 78.47-55, 78.47-57 and the Design Verification and Periodic Safety Test Procedures as required by Title 46 CFR Subparts 61 and 62. All control system plans shall be submitted to and approved by the U.S. Coast Guard Marine Safety Center.

(c) The Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to foundations, wiring, piping, hoses, alarms, hardware, fluids, lubricants, circuit breakers, etc. for a complete and operational system.

(d) The Contractor shall provide the services of a Voith technician to approve final installation and accomplish initial start up of control system.

3.6 SHAFTING (See Section 6.20)

(a) Propulsion shafting arrangement shall be as described herein. Shafting shall be solid 4" diameter minimum, turned, ground and polished steel in accordance with ASTM 1045. Apply corrosion preventive compound to all shaft segments to prevent rusting.

(b) Provide and install all necessary ancillary materials and equipment, including but not limited to all foundations, fasteners, guards, oils, fittings, hardware, etc., as required by the manufacturer for a complete and operational system.

3.6-1 LINE SHAFTS

(a) Provide and install line shafts in accordance with plans, coupled to the engine and at the opposite end to the propulsion unit through Voith bow tooth couplings as shown on plans. Provide and install all required lubricants in couplings.

(b) Provide and install line shaft sections as shown on plans. Bearings shall be as manufactured by Cooper. Inboard pillow block bearings on each shaft shall be non-expansion type. All other bearings shall be expansion type.

(c) Provide and install pillow block bearing foundations attached to hull structure as shown on plans. Provisions shall be made for vertical and lateral alignment of bearings as shown on plans. Bearings shall be set in Philadelphia Resins "Chockfast" after alignment.

(d) After vessel is afloat at least 24 hours, align shaft system with engines and propulsion units so that a total run out tolerance of no greater than .003 inch from true is achieved between line shaft segments.

3.6-2 COUPLINGS – LINE SHAFT

(a) Provide and install Ovako Steel, OKC 100 HB or latest equivalent production model, intermediate to intermediate shaft couplings as shown on plans.

(b) Contractor shall provide one #728236 tool set for installation and removal of couplings.

(c) Provide and install Voith bow tooth couplings type SBG 80 for the special connection of the propeller input shaft with the rigid shaft line between the gearboxes and propeller.

(d) Provide and install Voith bow tooth couplings type SBL 80 for the connection of the rigid shaft line with the engine mounted reduction gear output shafts flanges.

(e) Provide and install all necessary ancillary materials and equipment, including but not limited to all foundations, fasteners, guards, oils, fittings, hardware, etc., as required by the manufacturer for a complete and operational system.

3.6-3 BULKHEAD STUFFING BOXES

(a) Provide and install intermediate shaft bulkhead penetration stuffing boxes as shown on plans. Stuffing boxes shall be Johnson Marine Products, Figure 1790M, Code 0400 arranged for grease service.

(b) Provide and install remote grease fittings and high pressure hose outside of shaft guards to facilitate lubrication of stuffing boxes.

(c) Provide and install all necessary ancillary materials and equipment, including but not limited to all foundations, fasteners, fittings, packing, lubricants, hoses, etc., for a complete and operational system.

3.6-4 SHAFT GUARDS

(a) Provide and install propulsion/line shaft protective guards constructed of 2" x 2" x 1/4" angle frames and 1/4" aluminum pattern plate. Guards shall be attached to framing with 3/8" diameter allen head countersunk stainless steel machine screws. Angle frames shall be drilled and tapped. Provide shaft crossover sections in shaft guards in Voids 2A and 2B. Provide 1/8" thick rubber isolation material between angle frames and aluminum guards.

(b) Provide and install hinged covers in way of bearings and stuffing boxes in top of shaft guards. Hinges shall be stainless steel.

3.7 EXHAUST PIPING AND MUFFLERS

3.7-1 GENERAL

Provide and install complete exhaust system for all main engines and generator engines as shown on plans.

Air test system, including silencers, at 2 psi, correct leaks as required. The exhaust systems shall meet all applicable requirements of 46 CFR 58.10-10. Hull penetrations shall be seamless, schedule 80, 316 stainless steel pipe of size required. U.S. Coast Guard approved bulkhead penetrations shall be used where exhaust piping penetrates engine room bulkheads at frame 12A and 12B.

3.7-2 MAIN ENGINES

Provide and install Cowl Spiral Silencers, TR/TL Series, Model TS80TR, of size and type as shown on plans. Exhaust piping shall be ASTM – A106-72a, schedule 40 pipe. Hull penetrations shall be seamless schedule 80, 316 stainless steel. Provide and install flexible sections complete with flanges, hangers, bends, gaskets, insulation, etc., as shown on plans.

3.7-3 SHIP'S SERVICE GENERATOR ENGINES EXHAUST

Provide and install Cowl Spiral Silencers, TR/TL Series, Model TS40TR, of size and type as shown on plans. Exhaust piping shall be ASTM – A106-72a, schedule 40 pipe. Hull penetrations shall be seamless schedule 80, 316 stainless steel. Provide and install flexible sections complete with flanges, hangers, bends, gaskets, insulation, etc., as shown on plans.

3.7-4 EMERGENCY GENERATOR ENGINE EXHAUST

Provide and install Cowl Spiral Silencer, TR/TL Series, Model TS40TR, of size and type as shown on plans. Exhaust piping shall be ASTM – A106-72a, schedule 40 pipe. Hull penetrations shall be seamless schedule 80, 316 stainless steel. Provide and install flexible sections complete with flanges, hangers, bends, gaskets, insulation, etc., as shown on plans.

3.8 EXHAUST SYSTEM INSULATION

(a) Main, Ship's Service and Emergency Generator engines exhaust systems including exhaust piping, silencers, flexibles, etc., shall be insulated with U.S. Coast Guard Approved incombustible "asbestos free" material properly secured to all components of system and then sealed. Entire insulation shall be covered with "asbestos free" cloth painted with vapor barrier solution meeting the requirements of MIL-A-3316, Class 1, Grade B. Installation shall comply with the requirements of NVIC 5-80.

Removable insulation filled blankest shall be installed in way of all flexible expansion joints, silencer clean out fittings, pipe flange connections and turbocharger exhaust elbows. Where insulation in subject to damage, system shall be fitted with removable aluminum guards.

Insulation shall not be installed until piping systems have been tested to the satisfaction of the U.S. Coast Guard and the Inspector.

3.9 MAIN ENGINES CONTROL SYSTEMS

(a) Provide and install a twin engine, three (3) station main engine control system as shown on plans. System shall be Prime Mover Controls, Inc. MPC-D System configured to control two mechanically governed main engines and two gearboxes with solenoid inputs. System shall be arranged to control gearboxes from the neutral to ahead position only. System shall consist of all equipment for a fully operational system including but not limited to three Type 5500 Digital Control Heads, two Type 8550 propulsion controllers with optional computer connections and all required software, two Type 3380-1100 speed setting actuators w/manual override switches for inputs to mechanically governed engines, two Series 30 push-pull cables of required length and all factory pre-assembled electrical cables for interconnection of system components as required by the manufacturer. Contractor shall verify lengths of all required cable assemblies.

(b) Provide and install, for each engine control, one Prime Mover Controls 115 VAC input 24 VDC output at 15 amps power supply with switching relays to provide primary AC power from circuits in the emergency switchboard and that will automatically switch to 24VDC battery backup supplied by main battery banks when system relays sense a loss of primary 24 VDC power from power supply.

Switches and circuit breakers shall be installed in accordance with Section 4.31 of these Specifications to supply dedicated 24 VDC power back up. See Section 4.3 of this Specification for battery information. System shall be configured to provide a signal to activate alarms in the Engineer's Alarm Panel. See Section 4.17 of this Specification for alarm requirements.

3.10 SHIP'S SERVICE AIR SYSTEM

(a) Provide and install a ship's service air system complete with one air receiver, two compressors, piping, valves, fittings, motor controller, pressure gage, fittings, hoses, etc., of sufficient capacity and pressure to provide ships service air and activate air horn. Provide necessary air reducing station and air line lubricators. Air receiver shall be U.S.C.G. approved and stamped as same. Provide one copy of shop test report of hydrostatic test of air receiver to the Inspector.

(b) Provide and install two (2) ship's service air stations. One (1) station shall be adjacent to fire pump unit and one (1) station shall be adjacent to work bench in Engine Room. Stations shall be fitted with shut off valves, quick disconnect hose fittings and 25 feet of 1/4" rubber air hose, at each station, with quick disconnect fittings on both ends of hoses.

(c) Provide and install two (2) electric motor driven, Quincy Model 210 air compressors of sufficient capacity to automatically maintain approximately 6 CFM at 150 PSIG. One of the compressors shall be arranged to operating from emergency generator. Installation shall be complete with all necessary foundations, brackets, flexible connections, wiring, pressure switches, relief valves and alarm switch to activate alarm in Engineer's Alarm Panel. Compressor motor controllers shall be arranged for off/automatic/manual operation. Air receiver volume shall not exceed 5 cubic feet free air, approximately 30 gallons.

3.11 KEEL COOLERS, MAIN AND GENERATOR ENGINE COOLING

(a) Contractor shall provide and install Main and Ship Service Generator Engine Keel Coolers of size and type as recommended by Fernstrum to suit engine installations. Coolers shall be sized for zero hull speed and 80 degree F water temperature. Installation shall be complete with all valves, hull fittings, guards, piping, hardware, etc.

(b) Provide and install remote mounted expansion tanks for engines as required.

(c) Piping on interior of vessel shall be ASTM A-53, schedule 80 black pipe with socket weld fittings. Provide stainless steel, Category A, threaded lug type butterfly valves, meeting the requirements of 46 CFR 56.20-15, at all hull flange connections. Butterfly valves shall be attached to pipe flanges using bolts on both sides of valves so the piping system may be disassembled without removing the valves.

(d) Provide and install an engine cooling water make up system for all main an ship service generator engines as shown on plans. System shall be supplied from ships fresh water system. Use appropriate size copper tubing and ball valves at each engine expansion tank.

3.12 PUMPING AND PIPING SYSTEMS

3.12-1 BILGE SYSTEM

(a) Bilge suction system shall extend to each watertight subdivision. System shall consist of two (2) bilge pumps, manifolds fitted with stop-check valves, sea water connection and suction pipes to all spaces to be drained and discharge overboard to sea. System shall have a 2" suction at the low point of each compartment equipped with a bronze foot valve and strainer unit, Model 21522 as supplied by MP Pumps, Tecumseh Products Company, Detroit, Michigan, on each bilge suction.

Engine room shall have three (3) suctions, two (2) 2" independent suctions connected directly to bilge pumps and one (1) 2" suction connected to the bilge manifold. Installation shall be in accordance with 46 CFR 56.50-50. Bilge lines in A and B end peak tanks shall have gate valves located adjacent to foot valves and shall be remotely operated from main deck. Remote operator deck fittings shall be Stow Manufacturing Company, P/N 18389-612 provided in stainless steel complete with "T" wrench.

Install two (2) Hayward Model 53 BTX, bronze duplex strainers with stainless steel baskets as shown on plans. Installation shall be complete including all required gaskets, hardware, foundations, etc.

(b) Provide and install an anti-pollution discharge connection at main deck between tire guard and bulwark in accordance with 33 CFR 155.330 and 155.410. Provide and install Placard as required by 33 CFR 155.450. The bilge system must meet the containment and discharge requirements of 33 CFR 155.330.

(c) All valves and piping shall be as shown on plans.

(d) Apply protective coatings to all piping and pipe hangars in accordance with Section 5.1-2.

3.12-2 BILGE PUMPS

Provide and install two (2) FloMax –15, 3" x 3" pumps as shown on plans. Pumps shall be installed in a manner to permit dewatering of voids with either pump. Each pump shall be driven by a close coupled TEFC, 7 1/2 HP, 208 VAC, 3 Phase, 3450 RPM electric motor. One (1) pump shall be supplied from the emergency switchboard and one (1) pump shall be supplied from the ship service switchboard.

Installation shall be complete including but not limited to all foundations, hardware, motor controllers, wiring, etc., for a complete operational installation.

3.12-3 FRESH WATER SYSTEM

(a) Provide and install a fresh water system to drinking fountains, lavatories, toilets and engine room as shown on plans. All piping shall be schedule 80, 316 stainless steel with bronze valves as shown on plans.

(b) Provide and install fresh water 3/4" piping to area immediately above MSD Unit Chlorine tank in Void 2B. Provide ball valve at piping termination and a sufficient length of 5/8" garden type hose to allow easy refilling of chlorine tank. Provide bracket or hangar to stow hose.

(c) Provide and install corrosion resistant metal hose reels and high quality reinforced rubber hose in 50 foot lengths, minimum 5/8" diameter, commercial grade, with permanently attached brass couplings and brass nozzles at each hose bib shown on plans.

3.12-4 FRESH AND SANITARY WATER PRESSURE SETS

Provide and install fresh water pressure sets as shown on plans. Sets shall consist of but not be limited to McDonald Series 8151 cast iron pumps with brass impellers driven by 115VAC, 60HZ, single phase electric motors. Pumps shall be supplied with pressure operated switches set to start pump at 30 psig and shut-off at 50 psig. Provide and install Clayton Mark, Model CM8003, 30 gallon captive air tank as shown on plans.

3.12-5 WATER HEATER

(a) Provide and install one (1) Rheem M/N ELD 40-3, 120VAC, 2000 watts, 20 gallon water heater or equal as shown on plans.

(b) Water heater shall be mounted on a common foundation with pressure sets and storage tanks. Provide all necessary bracing to prevent heater movement.

(c) Hot water service shall be supplied to passenger toilets only as shown on plans.

(d) Water heater shall meet the electrical requirements of 46 CFR Subchapter "J" and pressure vessel requirements of 46 CFR Part 54. Relief valve discharge outlet shall be piped to bilge.

3.12-6 TOILETS – SANITARY SYSTEMS AND PIPING

(a) Each toilet shall be fitted with American Standard catalog number 2221.018, deck mounted, white vitreous china water closets, or equal as shown on plans. Each water closet shall be fitted with Sloan Royal 110-3 flush valves. Water closets shall be supplied with American Standard commercial high impact Polystyrene open front toilet seats with stainless steel hinges.

(b) Each toilet shall be fitted with American Standard catalog number 0360.024, white vitreous china lavatories complete with self-closing solid brass chrome plated faucets, drains, pop-ups as shown on plans. Provide and install in each toilet one (1) commercial grade toilet paper (roll) holder, one (1) soap dish and above each lavatory one (1) 12" x 18" mirror with stainless steel frame.

(c) Black water piping from water closets to MSD Unit shall be ASTM A-53, 4", schedule 40, black pipe as shown on plans. Provide and install at least three (3) 1-1/2" clean-out connections with pipe caps as shown on plans. Extreme care shall be taken to insure that the piping runs are held as high as possible so that the maximum amount of head clearance is maintained where the piping crosses walkway at approximately frame 14B while still maintaining an acceptable drop angle for the entire length of the pipe run.

This may require piping to pass through main deck deep frames. Compensate frame area loss by installing adequate doublers or inserts as required.

(d) Provide vents as shown on plans.

(e) Drains from lavatories and drinking fountains shall have "P" traps and vents and be connected to gray water lines for discharge overboard. Gray water shall not be lead into MSD Unit.

(f) Contractor shall provide and install all necessary ancillary materials and equipment including but not limited to all valves, unions, fittings, wax seals, nuts, bolts, lock washers, hangers, etc. All hardware shall be stainless steel.

3.12-7 MARINE SANITATION DEVICE

(a) Provide and install one (1) Red Fox, Type II, M/N RF 750M Marine Sewage Treatment Unit as shown on plans. Installation shall be complete in all respects including all foundations, piping, wiring, valves, etc., for a complete operational installation.

(b) Provide and install one (1) MP FloMax 8, 2" x 2", bronze, close coupled pump with 1.5 HP, 208 VAC, 3 phase, 3450 RPM, TEFC, frame 56C effluent discharge pump as shown on plans. Pump inlet and outlet shall be equipped with resilient seat butterfly valves. Pump discharge line shall be equipped with bronze check valve at the pump.

(c) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all foundations, discharge pump, fasteners, wiring, piping, fittings, valves, etc., for a complete and operational system.

(d) Contractor shall provide the services of a Factory Authorized Red Fox Technician to inspect the final installation and perform initial start up of the MSD Unit.

3.12-8 DECK DRAINS

(a) Provide and install Tate Andale, Inc., Model 60-100 A deck drains in each Passenger Toilet. Drains shall be 1 1/2" and shall be piped to discharge overboard through approved hull penetrations as shown on plans. All drain piping run in the interior of the vessel shall be ASTM-A53, schedule 40 hot dip galvanized with galvanized malleable iron fittings.

(b) Contractor shall provide and install drains in Pilot House and Passenger Lounge Exterior Deck perimeters using rectangular stainless steel tubing. Deck drains shall be incorporated into existing 4" x 4" and 4" x 2" stainless steel fashion plate and deck support structure wherever possible. Install 4" x 2" stainless steel tubing in all areas where deck drains cannot be incorporated into existing structure.

3.12-9 FUEL OIL PIPING SYSTEM

Provide and install a complete fuel oil piping system to all diesel engines as shown on plans and in compliance with 46 CFR 56.50-75. System shall include but not be limited to all supply lines, return lines, manifolds, ball valves and all associated fasteners, fittings, etc. for a fully operational system. Piping shall be seamless steel schedule 80 with socket weld fittings in accordance with 46 CFR 56.50-75. Fuel piping system shall be complete with flexible connections, in line Racor Model 75/900 MAX, Duplex fuel filters with drip pans, loops, valves, etc., at each Main Engine, Ships Service Generator Engine and Emergency Generator Engine in accordance with SAE Standards.

Fuel tank shut-off valves shall be arranged with Stow Manufacturing Company, P/N 18389-612 stainless steel deck fittings with remote reach rods as shown on plans. Fuel for the Emergency Generator 20 gallon day tank shall be taken from the manifold and pumped by a manually operated pump to the day tank as shown on plans. Provide and install a Gems XM 800, type 3, transmitter and Gems Standard TLI Receiver to indicate emergency generator fuel tank fuel level. TLI receiver shall be located adjacent to manual transfer pump. Emergency Generator day tank shall be fitted with an overflow return line connected to discharge in the top of the A end main fuel tank with a rotary liquid flow indicator, as shown on plans. Main fuel tanks shall be cross connected to provide equalization during fuel filling and normal engine operation. System shall be complete in all respects including but not limited to all fuel fill, return and vent piping, fittings, valves, USCG approved flex hoses, wiring, drip pans, filters with filter elements, hangers, spill containments, etc. for a complete and operational system.

3.12-10 FIRE MAIN AND SPRINKLER SYSTEM

(a) Provide and install one (1) Goulds, M/N 3196 MT, 2" x 3" x 10" fire pump, driven by a 40 HP, TEFC, 208 VAC, 3 PH electric motor as shown on plans. Seawater suction shall be taken from sea chest. Contractor shall provide and install fire pump motor controller which shall be reduced voltage, auto-transformer type, tapped at 65% and full line voltage, closed transition with two step timed acceleration. An adjustable 0-30 second plug-in timer shall be furnished to allow for time delayed starting. Motor controller shall be housed in a NEMA 4X stainless steel enclosure and shall be supplied from the Emergency Switchboard.

(b) Fire main system shall consist of six (6) 1 1/2" fire stations, each with 50 feet of 1 1/2" USCG Approved fire hose fitted with approved type AKRON #2032, solid stream and water spray fire hose nozzles with brass couplings as shown on plans. Threads for hoses and nozzles shall be 9 threads per inch. Provide and install J.W. Moon U-1294 valves at each fire hose station complete with spanner wrenches. Adapters between hose and valve are NOT permitted.

(c) Fire hoses shall be stowed on racks adjacent to each fire hydrant so that the hose may remain connected at all times. Suitable clips shall be provided to secure the nozzle and spanner wrench to each station.

(d) Provide and install a liquid filled 4" diameter pressure gage graduated from 0 to 200 psig in the fire main piping adjacent to pump discharge as shown on plans.

(e) Provide and install in the fire pump suction line a Hayward Model 53 BTX, 4", bronze duplex strainer with stainless steel trim including yoke screws and stainless steel strainer baskets as shown on plans.

(f) All piping shall be schedule 80 with socket weld fittings as shown on plans. Contractor may substitute long radius bends in any piping in lieu of welded fittings.

(g) Provide and install a complete manually actuated sprinkler system as shown on plans. All piping shall be schedule 80 with socket weld fittings as shown on plans. Contractor may substitute long radius bends in any piping in lieu of welded fittings. Piping runs in the overhead of the Vehicle Deck shall be carried as close as possible to the bottom of the upper deck structure so as to provide the maximum clearance possible between the main deck and the bottom of the sprinkler heads.

Installation shall be complete in all respects including but not limited to all piping, hangers, sprinkler heads, valves, fittings, etc., for a complete and operational system.

(h) All butterfly valves installed in the fire main and/or sprinkler system shall be Category A resilient seat, threaded lug type, as shown on plans.

3.13 VENTS,OVERFLOWS AND SOUNDING TUBES

3.13-1 VENTS AND OVERFLOWS

(a) Fuel oil tanks shall be fitted with 2 1/2" vents in accordance with and as required by 46 CFR 56.50-85. Bronze inverted vent check valves, with flame screens, shall be installed at the termination of all vent pipes as shown on plans.

(b) Fore Peaks A and B and Voids 2A and 2 B shall be fitted with two inch, 316 stainless steel vents as shown on plans.

(c) The fresh water tank shall have a two inch, 316 stainless steel vent as shown on plans. Stainless steel piping shall extend from tank top to termination of vent piping on main deck. A bronze inverted vent check valve, with screen, shall be installed at the termination of vent pipe as shown on plans.

(d) Lube oil storage tank located in the Engine Room shall have a 2" vent terminating in the Engine Room, in accordance with 46 CFR 56.50-85 (a) (4), as shown on plans. Vent termination shall with provided with a flame screen.

3.13-2 SOUNDING TUBES AND FITTINGS

(a) The fuel oil tanks shall have a Kings Point Machinery KPM-10095-M-1 or equal deck fittings and 1 1/2" sounding tubes as shown on plans. The section of piping inside fuel tanks shall not be galvanized. Provide and install a 6" diameter x 20.4# steel striker plate, seal welded, under each sounding tube. See 46 CFR 56.50.90.

(b) Fore Peak A and B shall have a Kings Point Machinery KPM-10095-M-1 or equal deck fitting and a 1 1/2" sounding tube as shown on plans. Provide and install a 6" diameter x 15.3# steel striker plate, seal welded, under each sounding tube.

3.14 SEA CHESTS, STRAINERS AND OVERBOARD DISCHARGES

Forward and aft suction sea chests shall be fitted with removable and hinged 3/8" stainless steel plate strainers as shown on plans. Strainer plates shall have a minimum open area through holes of 250 square inches. Sea chests shall be fabricated of 20.4# plate and installed as shown on plans. Provide and install two (2) 6" x 12" x 1 1/4" bolt on type zinc anodes, mounted with stainless steel studs, in each sea chest. Provide and install sea valves and vent valves as shown on plans.

3.15 FIXED CO2 FIRE EXTINGUISHING SYSTEMS

3.15-1 ENGINE ROOM

Provide and install in the Engine Room a fixed CO2 fire extinguishing system as manufactured by Kidde Fenwal as shown on plans. Installation shall comply with 46 CFR 76.15. Pull boxes shall be located adjacent to the Engine Room access door on the Main Deck as shown on plans. CO2 cylinders shall be stowed below main deck between frames 13A and 14A as shown on plans. Provide and install automatic CO2 operated cut-off switches for all ventilation system fans.

3.15-2 EMERGENCY GENERATOR ROOM

Provide and install in the Emergency Generator Room a fixed CO2 fire extinguishing system as manufactured by Kidde Fenwal as shown on plans. Installation shall comply with 46 CFR 76.15 and 112.50-1 (g). System shall be arranged to shut down Emergency Generator Engine on CO2 system discharge.

3.16 PIPING INSULATION

All hot, cold and flushing water piping, all air conditioning piping and tubing including valves and all air conditioning condensate drain piping carried inside vessel structure shall be insulated with U.S. Coast Guard approved insulating material as necessary to prevent heat transfer, sweating and/or freezing. Where insulation is subject to damage it shall be covered with removable aluminum sheet metal guards.

3.17 VENTILATION

3.17-1 VENTILATION – ENGINE ROOM

(a) The Engine Room ventilation supply trunk and transitions shall be provided and installed as shown on plans. Terminal outlet within engine room shall be fitted with a filter grill assembly arranged for easy removal and installation of standard size filter elements.

(b) Provide and install a Hartzell, Model S44-286DA-STAIL3 fan driven by a 5 HP, 208 VAC, 3 PH, 1770 RPM, TEAO, 50 degree C motor as shown on plans. Fan shall be capable of delivering approximately 12,850 CFM @ 1" SP. Fan shall be equipped with Hartzell spiral ring guard and inlet bellmouth. Fan housing and bellmouth shall be epoxy coated inside and out.

(c) Provide and install four (4) Engine Room exhaust ducts as shown on plans. Two (2) exhaust ducts shall be provided with Hartzell Model A44-186DA-STAMH3 fans driven by 1HP, 208 VAC, 3 PH, 1750 RPM, TEAO, 50 degree C motors as shown on plans. Fans shall be capable of delivering approximately 3,260 CFM @ 1 1/4" SP. Fans shall be equipped with Hartzell spiral ring guards and inlet bellmouths. Fan housings and bellmouths shall be epoxy coated inside and out.

(d) All Engine Room and MSD Compartment fans shall be arranged to shut down automatically on discharge of Fixed CO2 System and all Engine Room and MSD Compartment fans shall be arranged to be manually shut down from vent fan stop switches complying with 46 CFR 111.103-7. One switch shall be located adjacent to the engine room emergency escape hatch on the main deck and one switch shall be located in the A end pilot house control console.

3.17-2 MSD COMPARTMENT VENTILATION

(a) The MSD Compartment ventilation supply trunk and transition shall be provided and installed as shown on plans.

(b) Provide and install one (1) Hartzell Model S44-126DA-STAIG2 fan driven by a 3/4 HP, 208 VAC, 3 PH, 1750 RPM, TEAO, 50 degree C motor as shown on plans. Fan shall be equipped with Hartzell spiral ring guard and inlet bellmouth. Fan housing and bellmouth shall be epoxy coated inside and out. See Item 3.17-1 (d) for fan automatic and remote stop requirements.

3.17-3 EMERGENCY GENERATOR ROOM VENTILATION

Provide and install two (2) American Warming and Ventilation Company Model VC-412 Volume Control Dampers in transverse bulkhead at frame 7A as shown on plans. Complete dampers shall be 316 stainless steel with blades and frames a minimum 11 gauge. Dampers shall be automatically operated by a Barber Colman MA-418 actuator supplied by electrical circuit from emergency switchboard. Dampers shall be arranged to automatically open on start of emergency generator engine and automatically close on stop of generator engine. Contractor shall determine final dimensions and locations of dampers based on location of emergency generator radiator. Contractor shall revise plans to show any and all changes in dimensions and locations.

3.17-4 VOITH PROPULSION SPACES VENTILATION

Provide and install two (2) natural ventilation trunks in each Voith Propulsion Space (Voids 1A and 1B) in locations as shown on plans. Do not install ducting or transitions below main deck. Provide adequate penetrations of approximately 8" x 18" in main deck to accommodate air flow through dampers located on the inside of bulwarks.

3.17-5 TOILETS

Provide and install one (1) NuTone M/N C3703 or equal power vent fan in each toilet with discharge to exterior through water excluding cowling with insect screen covers as shown on plans.

3.17-6 PILOT HOUSE WINDOW DEFROSTERS

(a) Fabricate and install, integral with each pilot house console, a discharge duct system of 20 gage aluminum to distribute hot air to the bottom of A end and B end pilot house windows. Duct work shall be fitted with a minimum of four (4) Whisper Flow Ventilators, as supplied by Aircraft Spruce and Specialty Co., Corona, CA, in each console. Duct work shall be insulated to prevent heat transfer to interior of consoles.

(b) Provide and install in each console one (1) forced air heater/blower unit, Model HBU-1.5-C8 as manufactured by Marine Development Corp., Richmond, VA. Heater/Blower units shall be supplied from circuit breakers of size and type required located in Pilot House Panel P-2.

(c) Heater/Blower units shall be installed in pilot house consoles and shall be provided with air inlet filter grills as shown on plans. Heater/Blower units shall be configured with Off-Fan/Heater/Fan Only controls surface mounted in each pilot house console.

(d) Installation shall be complete in all respects including but not limited to all fans, heaters, ducts, insulation, ventilators, circuit breakers, switches, wiring, fasteners, foundations with vibration isolators, etc., for a complete operational system.

3.17-7 VENTILATION DAMPERS

(a) All Engine Room Ventilation supply inlet and exhaust discharge trunks, all Voith Propulsion Space Ventilation supply inlet/discharge trunks and MSD Compartment inlet trunk shall be fitted with Volume Control Dampers of sizes and in locations as shown on plans.

(b) All Volume Control Dampers shall be American Warming and Ventilation Model VC-412 all stainless steel construction with a minimum thickness of 11 gauge. All Dampers located in the bulwarks shall be configured to be manually operated from the inside of the bulwark using stainless steel handles or controls that do not extend into the vehicle parking areas of the main deck and will not pose a hazard for passengers transiting these areas. Damper Manual Operators shall be capable of being secured in the open or closed position with out the use of a tool. All dampers shall be clearly marked "In Case of Fire Close Damper". All damper controls shall be clearly marked "Open" and "Close" as appropriate.

3.18 HEATING AND AIR CONDITIONING

(a) Space heating and cooling shall be provided with all necessary automatic and manual controls, electrical installations, fans, etc., to provide heating and cooling as shown on plans.

(b) Provide and install two (2) FloMax 5, 1 1/2" x 1 1/2" bronze centrifugal pumps with 1 1/2 HP close coupled motors for raw water cooling circuit for A/C system as shown on plans. Provide and install one (1) Hayward Model 53BTX, 2", bronze duplex strainer with stainless steel trim and 1/16" perforated stainless steel baskets. Installation shall be complete in all respects including foundations, piping, valves, wiring, motor controllers, hardware, etc., as shown on plans.

3.19 GUARDING OF MACHINERY

Provide and install guards to prevent injury to operating personnel. Installation of guards shall be fitted on but not limited to such items as belts, motor/pump connections, all propulsion shafting, pulleys, etc. Also refer to Section 1.37 of these Specifications. Propulsion shafting guards shall be aluminum pattern plate.

3.20 DRIP PANS

(a) Provide and install 20 gauge galvanized, sheet metal, with minimum 2" flanged sides, drip pans under all engines. Drip pans shall be provided with all necessary supports to restrain movement and shall be easily removable for cleaning and maintenance.

(b) Provide and install steel plate drip pans under all pump installations with drains running directly to bilge.

3.21 PILOT HOUSE WINDOW WASHERS

Provide and install on each forward pilot house window a window washer assembly. Installation shall utilize washer nozzles provided with window wiper assemblies. Installation shall consist of copper tubing water supply piping from the vessels fresh water system routed from the most convenient source available to suit installation. Provide AC solenoid valves for each washer unit. Momentary switches located in the window wiper control panels shall actuate solenoid valves. Electric power for system shall be provided from one circuit breaker located in Pilot House Panel P-2.

3.22 MAIN AND SHIP SERVICE GENERATOR ENGINE OIL FILTERS

(a) Provide and install adjacent to each main engine one (1) Gulf Coast Filters, Inc., Model 2XO-2M lube oil filter assembly complete with drip pan. Filter assembly shall be mounted high enough of its foundation to permit a one gallon bucket to be placed under the filter housing to facilitate draining filter unit.

(b) Provide and install adjacent to each ship service generator engine one (1) Gulf Coast Filters, Inc., Model O-1 lube oil filter assembly complete with drip pan. Filter assembly shall be mounted high enough of its foundation to permit a one gallon bucket to be placed under the filter housing to facilitate draining filter unit.

(c) Installation shall be complete in all respects including all required hoses, tubing, isolation ball valves at engines to isolate filters from engine oil supply and filter elements. Contractor shall determine exact points of supply from engines to filters and returns from filters to engines from engine manufacturer.

3.23 AUXILIARY EQUIPMENT

(a) Provide and store on board as directed by the Inspector the following items:

(1) One Fuel Transfer Pump, McMaster-Carr No.13455K11 or equal.

(2) Two Self-Retracting Air Hoses, McMaster-Carr No. 5245K12, complete with male and female quick disconnect fittings, or equal.

(3) One Lever-Handle Blowgun, McMaster-Carr No. 5457K51 with male quick disconnect fitting or equal.

(4) One Hot Dipped Galvanized Steel garbage can, McMaster-Carr No. 4068T6 or equal.

(5) Two Hot Dipped Galvanized Steel garbage cans, McMaster-Carr No. 4068T2 or equal.

SECTION IV

CONSTRUCTION SPECIFICATIONS

PROJECT WBS 34132.1.6

4.0 ELECTRICAL SYSTEMS

4.1 GENERAL

(a) Installation and equipment shall be in accordance with the best commercial marine practice, and as required by U.S. Coast Guard Standards, Electrical Engineering Regulations CG-259, 46 CFR, Parts 110-113 inclusive, as amended to date of contract, and I.E.E.E. Standard #45, Recommended Practice for Electrical Installations Shipboard. Each pressure-type wire connector and lug shall conform to U.L. 486A and be of the ring or captive spade type and shall be installed on the wire with a one cycle compression tool. Twist-on type connectors are NOT allowed in any location or application.

(b) All Cable and Wiring shall conform to the construction an installation requirements of 46 CFR 111.60 as applicable and be carried in open wireways and clipped up. Conductors to be of soft annealed round cooper wire, evenly tinned, without weld, splice or joint throughout entire length. Mains and branches to be sufficient in size to permit a maximum voltage drop of no more than 3 percent.

(c) Circuits shall lead as directly as possible. No cables shall be run in bilges below floor plating level. Leads shall be accessible and arranged to prevent chaffing, with stainless steel kick pipes extending 6" up where passing through decks.

(d) Cables shall be in stuffing tubes or approved multi-cable transits where piercing watertight bulkheads or decks.

All watertight junction boxes shall be Pauluhn #523 or equal with gaskets, etc., provided as needed. All cables shall be carried in the interior of the hull or superstructure. Where fixtures and equipment are fitted on exterior surfaces of the vessel, cable shall be run in 316 stainless steel pipe screwed directly into all light fixtures, junction boxes, receptacles, shore power boxes, fan housings, sound powered telephones, etc.. Stainless steel unions, type 316, shall be provided as close as practical to each fixture to facilitate easy removal. Where cables are run to fixtures which are designed to be adjustable such as spot lights; flood lights, and public address system speakers, stainless steel pipe shall terminate as close as possible to the fixture and a watertight Simplex Receptacle equal to Pauluhn #2632 shall be provided. Short lengths of Heavy Duty "SO" Cord shall be provided with watertight plugs equal to Pauluhn #420-P from each fixture to the receptacle. All fasteners used to attach fixtures or equipment to the vessel shall be stainless steel.

(e) Watertight fittings and appliances shall be hose tested. Watertight junction boxes, switches, and other fixtures shall be provided where located in the weather or subject to moisture. All sockets for lights shall be of standard base type. All receptacles shall be grounded type.

(f) All fluorescent fixtures shall be equal to Pauluhn type FR or FPS type, drip proof, as shown on plans or specified herein, complete with lamps and clear lenses.

(g) All incandescent fixtures shall be the standard base type, equal to Pauluhn #729B, complete with brass junction box, brass guard and clear glass globe. Lamps shall be 100 watt unless otherwise shown on plans or specified herein.

(h) All electric motors installed in the engine room, auxiliary machinery spaces or open decks, or otherwise exposed to the weather shall be TEFC type, rated 50 degrees C and be in accordance with all requirements of I.E.E.E. #45 (latest issue).

(i) Except as otherwise specified, all integral horsepower motors shall have horsepower, speed, and torque characteristics that will best suit the intended application. Design ambient temperature shall be 50 degrees C. All ratings shall be continuous duty unless the application definitely permits an intermittent duty rating.

(j) Fan motors installed in ventilating trunks shall be TEAO type construction, with multispeed windings if specified.

(k) All motors shall be self-ventilating, with rotor attached fans, if necessary. Insulation shall be Class "A", or better.

(l) Bearings shall be of the readily renewable anti-friction (ball or roller) type. Bearing housings shall be equipped with pressure and relief fittings for grease lubrication, and all such fittings shall be of a uniform type. Pressure fittings shall be so located as to facilitate lubrication. If necessary, they shall be extended to an accessible location by suitable piping. In lieu of provided fittings, anti-friction bearings may be of prelubricated "sealed-for-life" type, provided that the lubricant is of a type guaranteed not to deteriorate during the guaranteed full life of the bearings, and that the seals and housings are of such design as will prevent entry of contaminants and/or loss of lubricant.

(m) Manual starting switches may be used for all fractional horsepower motors, single phase or three phase.

These switches shall have a "quick-make-break" mechanism and shall provide thermal overload protection to the motors, except where such protection is built into the motors. These switches shall be in waterproof corrosion resistant housings.

(n) All motors, including fractional horsepower motors, unless otherwise specified, shall be provided with magnetically operated controllers and equipped with green "run lights".

(o) In addition, starters of the reduced voltage type shall have a 5 pole start contactor, a timing relay to change from "start" to "run", and an auto-transformer having 50, 65, and 80 percent taps. Such a reduced voltage starter shall be provided for all motors larger than 15 horsepower, if any.

(p) The complete starter shall be housed in a marine type corrosion resistant, self-ventilating, drip proof enclosure type SDW-21 as manufactured by Square "D", suitable for bulkhead mounting where practicable. Control circuit voltage shall not exceed 120 volts (single phase).

(q) All starters and control components shall be capable of satisfactory operation when inclined as much as 30 degrees in any direction. Design ambient temperature shall be 50 degrees C. All thermal devices shall be calibrated for 50 degrees C. The starters of motors which are stopped automatically by control devices, such as pressure switches, shall include a selector switch with positions marked "Manual", "Automatic" and "Off", connected to function accordingly. The starters of motors that can be started and stopped from remote locations shall include a selector switch with positions marked "local" and "remote" and connected to function accordingly. All magnetic starters shall provide low voltage protection except as otherwise specified.

Starters shall be installed as conveniently near their respective motors as possible. If a starter must be installed at a point from which the motor served is not visible, separately mounted "start-stop", "push-buttons", shall be installed near the motor, in addition to those at the starter. These push buttons shall be in waterproof Bronze enclosures.

(r) All circuits shall be properly fitted with protected switches. Circuit breakers to be calibrated for operation in an ambient temperature of 50 degrees C.

(s) Provide Kindorf bar hangers, clips and U-style mounting brackets, etc., as necessary for a complete and satisfactory installation. All hangers, clips and fasteners on external areas of the vessel shall be stainless steel continuously welded where applicable.

(t) All cables shall be labeled with "embossed metal tags" secured to cable at each distribution panel and at cable entrance point on all electric motor controllers; lighting fixtures, and all other electrical equipment and fixtures. Additional labels shall be provided on all cables at sufficient intervals to allow ready identification of cables and circuits.

4.2 GENERATOR SETS (See Section 6-9)

4.2-1 SHIPS SERVICE GENERATORS AND ENGINES

(a) Provide and install complete as shown on plans, two (2) Caterpillar C4.4 DITA generators rated 90 kW 120/208 VAC, 3 phase, 60 HZ generator sets with series boost to provide primary ships service electric supply. Generator engines shall be configured for 24 VDC starting. Engines shall be provided without alternators. Generators and generator engines installation shall comply with all currently applicable U.S. Coast Guard Regulations 46 CFR Part 111. Generators shall not be arranged for parallel operation.

(b) Each generator shall be provided with a control panel mounted in the main switchboard. Each panel shall contain an AC voltmeter, amp meter, frequency meter, rheostat, and regulator on/off switch. Voltage regulators shall be mounted in and controlled from main switch board.

Engines shall be arranged for keel cooler installation, dry exhaust and local manual throttle control. Engines shall be equipped with all accessories and equipment for intended service and in addition be equipped with fuel and oil filters, AirSep crankcase emission canister dry charge coolant conditioner and deluxe engine mounted instrument panel. Engines shall be equipped with 3-way bypass valve, engine mounted and plumbed to allow for low oil pressure shutdown testing. Engines shall be configured to automatically stop on loss of engine oil pressure, high jacket water temperature, low coolant level or engine overspeed. Engines shall be provided with normally closed dry alarm contacts for high water temp., low oil pressure, high oil temp., low fuel pressure and overspeed pre-wired to custom junction box for connection to ships alarm system.

(c) Provide flexible hose of suitable length and all necessary fittings and valves to facilitate easy engine oil change. Engine manufacturer shall approve installation.

(d) All external moving or hot parts of engines and generators shall be provided with suitable guards to prevent personal injury. Turbocharger housing shall be insulated with removable thermal blanket.

(e) Provide and store on board vessel as directed by Inspector, four (4) copies each of generator and engine service, parts, and operators manuals. Eight (8) each, spare fuel filters and oil filters and two (2) intake air filters.

(f) Provide and install ACE Series 630 spring vibration isolators between foundations and generator mounting rails.

(g) Contractor shall provide and install Racor Duplex Fuel Filters in accordance with Section 3.12-9.

(h) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all foundations, fasteners, wiring, piping, hoses, fittings, hardware, etc., for a complete and operational system.

(i) Engines and generators shall be warranted for a 12 month period from delivery of vessel.

4.2-2 EMERGENCY GENERATOR AND ENGINE

(a) Provide and install complete, one (1) 72 KW, 120/208 VAC, 3 Phase, 60 HZ, generator set including series boost to provide emergency ships service electrical supply. Generator and generator engine construction and installation shall comply with all currently applicable U.S. Coast Guard Regulations for a vessel of this class.

(b) Generator shall be provided with control panel mounted in the emergency switchboard. Panel shall contain an AC volt meter, amp meter, frequency meter, rheostat, and regulator on/off switch. Voltage regulator shall be mounted in and controlled from emergency switchboard. Generator shall be configured to automatically transfer load. (See Section 4.5)

(c) Generator and engine shall be latest production model C4.4 as manufactured by Caterpillar. Engine shall be arranged with radiator cooling, engine mounted tachometer and 12 VDC electric starting.

Engine shall be configured to automatically stop on loss of engine oil pressure, high water temperature, engine overspeed, and carbon dioxide system discharge.

(d) Provide flexible heavy duty hose of suitable length and all necessary fittings and valves to facilitate easy engine oil change. Install Racor Duplex Fuel Filters in accordance with Section 3.12-9. Engine manufacturer shall approve installation.

(e) Provide and install one (1), 120 VAC engine jacket water pre-heater. Electrical service shall be from circuit breaker of proper size and type, located in emergency switchboard.

(f) Engine and generator shall be warranted from the manufacturer for a 12 month time period from delivery of vessel.

(g) Generator shall be mounted on Ace Mounting Co. Series 630 spring vibration isolators.

(h) Provide and store on board vessel as directed by Inspector four (4) copies each of engine service manuals, parts manuals, and operators manuals. Four (4) each , spare fuel filters and oil filters and one (1) intake air filter.

(i) Installation shall be complete in all respects, including but not limited to all foundations, fasteners, wiring, etc., for a complete and operational system.

4.3 BATTERIES AND CHARGERS

(a) All batteries and battery charger construction and installation shall comply with 46 CFR 111.15, 112.50-5, 112.55, I.E.E.E. Standard 45 Section 16 and A.B.S. Section 34.39. All batteries shall be carried in approved fiberglass battery boxes, provided with adequate foundations, and secured to prevent movement.

(b) Batteries and battery chargers shall be provided as follows:

1. General Alarm Battery

a. One 12 VDC battery bank of sufficient capacity to operate general alarm system in accordance with 46 CFR 113.25.

b. One (1) LaMarche A 41-10-12V-D1 battery charger supplied from the emergency distribution panel with 208 VAC in accordance with 46 CFR 113.25.

2. Emergency Generator Engine Starting

a. One (1) 12 VDC battery bank of sufficient capacity for starting engine in accordance with 46 CFR 112.50.

b. One (1) LaMarche A41-10-12V-D1 battery charger supplied from the emergency distribution panel with 208 VAC in accordance with 46 CFR 112.55.

3. Main Propulsion and S/S Generator Engine Starting

a. Two (2) 24 VDC battery banks each of sufficient capacity for starting main propulsion engines in accordance with A.B.S. Rules for Building and Classing Steel Vessels, Section 34.39. Battery banks shall be provided with approved rotary type switch of proper capacity and shall be cross connected in such a manner as to be capable of starting any main engine and/or any S/S generator engine from either battery bank. Battery switch unit shall be arranged with a center off position and as shown on plans.

b. One (1) LaMarche A41-20-24V-D1 battery charger supplied from the emergency distribution panel with 208 VAC, for ships service generators, in accordance with 46 CFR 112.55. One (1) LaMarche A41-30-24V-D1 battery charger supplied from the main distribution panel, with 208 VAC, for main engines, in accordance with 46 CFR 112.55.

(c) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all foundations, battery boxes, cables of sufficient size to supply required amperage to all starters, solder type battery lugs, circuit breakers of proper size and type, wiring, hangers, etc., for a complete and operational system.

4.4 MAIN SWITCHBOARD / DISTRIBUTION PANEL

(a) Provide and install complete: one (1) Main Ship Service Switchboard. Switchboard shall be free standing. Switchboard shall be manufactured by Industrial Power Systems, Inc., Jacksonville, FL.

(b) Switchboard shall be configured to control two (2) 90 kW, 120/208 VAC, three (3) Phase, 60 HZ generators arranged for non-paralleled operation, and to distribute normal loads.

(c) Switchboard distribution panel shall be configured to contain all circuits required and in addition be provided with at least seven (7) spare breaker spaces complete with all buss work and breaker bases.

(d) Switchboard shall be top cable entry type, free standing. Provide foundations as required. Final location to be approved by Inspector.

(e) Switchboard shall be configured with two (2) circuit breakers for 200 amp,208 VAC, 3 phase shore power service and a mechanical interlock between S/S generators and shore power breakers. Shore power circuit breakers shall be electrically interlocked to prevent energizing shore power receptacles when shore tie cable is not attached.

(f) Provide and store on board vessel as directed by Inspector, one (1) spare circuit breaker for each different type circuit breaker installed in switchboard.

(g) Contractor shall provide detailed drawings in accordance with Section 1.11 and shall submit same to Owner and U.S. Coast Guard for approval prior to installation of switchboard. Drawings shall contain a list of material with description, manufacturer's name, model/make, quantity, piece mark, etc., and shall comply with 46 CFR 110.25.

(h) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all foundations, fasteners, wiring, grounds, etc. for a complete and operational system and in accordance with manufactures drawings. Contractor shall provide and install mats in accordance with 46 CFR 111.30-11.

(i) Contractor shall provide the services of a factory authorized technician to inspect and approve final installation of switchboard.

4.5 EMERGENCY SWITCHBOARD/DISTRIBUTION PANEL

(a) Provide and install complete: one (1) Emergency Service Switchboard. Switchboard shall be free standing. Switchboard shall be manufactured by Industrial Power Systems, Inc., Jacksonville, FL.

(b) Switchboard shall be configured to control one (1) 72 KW, 120 / 208 VAC, 3 phase, 60 HZ generator and to distribute emergency loads.

(c) Switchboard shall be arranged to provide automatic starting, automatic load transfer to comply with 46 CFR 112.25-10, and automatic stopping of the emergency generator engine accomplished through an adjustable time delay with range of at least 0-5 minutes after normal source of power has been restored.

(d) Switchboard distribution panel shall be arranged to provide distribution to all circuits required by 46 CFR 112.15-5 and any additional circuits shown on plans and a minimum of three (3) spare circuit breaker spaces complete with all buss work and breaker bases.

(e) Contractor shall provide and store onboard vessel as directed by Inspector, one (1) spare circuit breaker for each different type installed in switchboard.

(f) Contractor shall provide detailed drawings in accordance with Section 1.11 and shall submit same to Owner and U.S. Coast Guard for approval prior to installation of switchboard. Drawings shall contain a list of material with description, manufacturer's name, model/make, quantity, piece mark, etc., and shall comply with 46 CFR 110.25.

(g) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all foundations, fasteners, wiring, etc. for a complete and operational unit. Provide and install mat in accordance with 46 CFR 111.30-11.

(h) Contractor shall provide the services of a factory authorized technician to inspect final installation and prove operational all switchboard automatic functions and alarms.

4.6 DISTRIBUTION PANELS/SYSTEMS

(a) Contractor shall conduct a complete inventory of all circuits and equipment supplied by the main switchboard and the emergency switchboard distribution panels.

(b) Contractor shall provide and install all power and lighting panels as shown on Drawing NEWHAT–34 (VSP) and as required by inventory in Paragraph (a) complete with all circuit breakers of size and type required.

(c) Circuit breakers and circuit breaker panels shall be as manufactured by "Square-D", and shall be sized to provide space for all required circuit breakers and a minimum of six (6) spare circuit breaker spaces complete with buss work in each panel. All circuit breakers shall be QOB type.

(d) Circuit breaker panels shall be provided in at least the following locations and be labeled as follows:

1. Pilot House-Emergency Power and Light Panel P-1

2. Pilot House-Normal Power and Light Panel P-2

3. Passenger Lounge-Normal Power and Light Panel P-3

4. Engineer's Control Booth-Power and Light Panel P-4.

(e) All circuit breaker panels shall be "Flush Mounted" or boxed in joiner system.

(f) All circuit breakers and panels shall comply with all applicable requirements of Title 46 CFR Subchapter J – Electrical Engineering.

(g) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all enclosures, circuit breakers, foundations, fasteners, stuffing tubes, wiring, labels, etc. for a complete and operational system.

4.7 PILOT HOUSE SEARCHLIGHTS

(a) Provide and install four (4) 1000 watt 120 VAC figure #885 HB2 PLB, searchlights w/#846 lamps, as manufactured by Perko, Inc., Miami, Florida.

(b) Searchlights shall be installed on top of pilot house and located to provide easy operation from the pilot house control stations. Final location shall be approved by Inspector.

(c) One searchlight on each end of pilot house shall be supplied from circuit breaker Panel-P 1 and one searchlight on each end of pilot house shall be supplied from circuit breaker Panel-P2. Each searchlight shall be controlled from independent switches located in top of pilot house consoles. All wiring shall be in accordance with specification Section 4.1.

(d) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all mounting brackets, stainless steel fasteners, stainless steel pipe, receptacles, plugs, switches, circuit breakers, wire, etc. for a complete and operational system.

4.8 INFLATABLE BUOYANT APPARATUS FLOODLIGHT

(a) Provide and install one (1) 200 watt 120 VAC marine outside type flood light catalog # 740 SM HDL w/Par 46 sealed beam, as manufactured by Pauluhn Electric Mfg. Co., Pearland, Texas.

(b) Floodlight shall be installed adjacent to IBA's mounted to illuminate launching area in accordance with 46 CFR 112.15-1 (g) and 112.43-11. Final location shall be approved by the Inspector.

(c) Floodlight shall be supplied from a circuit breaker of proper size and type, located in circuit breaker Panel P-1. No other means of controlling floodlight shall be provided. All wiring shall be in accordance with specifications Section 4.1.

(d) Contractor shall provide two (2) spare Par. 46 sealed beam lamps. Lamps shall be stored onboard vessel as directed by Inspector.

(e) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all mounting brackets, stainless steel fasteners, stainless steel pipe, receptacles, plugs, circuit breakers, wiring, etc. for a complete and operational system.

4.9 NAVIGATION LIGHTS AND PANEL

(a) Provide and install all navigation lights required by the latest edition of the U.S. Coast Guard Inland Navigation Rules for Double Ended Ferry Vessels of 180 feet. Horizontal and vertical positioning and spacing and intensities of lights shall comply with U.S. Coast Guard Regulations.

(b) All navigation lights shall be manufactured by Perko Inc., Miami, Florida. Navigation lights shall be double lens type, not under command lights shall be single lens type. Lights shall be complete with lamps. All lights shall be cast bronze.

(c) Contractor shall provide and install brass waterproof duplex receptacles 2634B and plugs 420BP as manufactured by Pauluhn at each navigation light fixture. Installation shall comply with 46 CFR 111.75-17 and 112.15-1.

(d) Provide and install in "A" End pilot house console one (1) navigation light control panel, PMC type 8010 flush mounted, with automatic direction selector switch interfaced with steering console selector switch, as manufactured by Prime Mover Controls, Burnaby, British Columbia, Canada. Installation of navigation light control panel shall comply with 46 CFR 111.75-17 and 112.43-13.

(e) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to foundations, masts, side light screens, wiring, stainless steel pipe, duplex receptacles and plugs, stainless steel fasteners, connections with Voith Bosch/Rexroth Control system consoles for navigation light directional controls, etc. for a complete and operational system. Installation shall be in accordance with specification Section 4.1.

(f) Contractor shall provide two (2) spare navigation light lamps for each type installed. Contractor shall provide manufacturer's recommended spare parts for navigation light panel. Spare parts shall be stored on board vessel as directed by Inspector.

(g) Contractor shall show exact "As Built" locations of all navigation lights including height above main deck, vertical and horizontal separation and identification of all lights on plans.

NOTE: PMC PANELS ARE NOT TYPE ACCEPTED AND REQUIRE U.S.C.G. APPROVAL FOR EACH TYPE PANEL INSTALLED. CONTRACTOR SHALL SUBMIT REQUIRED PLANS TO U.S.C.G. FOR APPROVAL.

4.10 LIGHTING AND RECEPTACLE SYSTEMS

(a) Provide and install all lighting and receptacle fixtures in accordance with 46 CFR 110, 111, and 112 as applicable and in accordance with plans and specification Section 4.1.

(b) Installation shall consist of but not be limited to the following minimum number of fixtures and receptacles. All components shall be manufactured by Pauluhn Electric Mfg. Company, Pearland, Texas unless otherwise specified or shown on plans. All fixtures and receptacles located in Pilot House and accommodation areas shall be flush or recess mounted.

NOTE: All switches, light dimmer controls and switch boxes required by this section shall be provided and installed by the Contractor.

1. Pilot House

(a) Two (2) FR320DPJ fluorescent fixtures provided with a red transparent lens on center lamp of each fixture configured to allow independent operation of either "White" or "Red" lamps using two (2), three position switches. Switch shall be "on", "off", "on".

(b) Two (2) #2702 AF double receptacles for 15 amp 125 VAC service.

(c) All instruments and illuminated indicators shall be provided with internal or external "Red" lighting so as to be easily visible at night and be provided with "Off-On" dimmer control switches.

2. Passenger Lounge

(a) Five (5) FR 220DPJ fluorescent fixtures.

(b) Four (4) #2702 AF double receptacles for 15 amp 125 VAC service.

(c) Two (2) #APH18 incandescent standard AC exit sign as supplied by W.W. Grainger, Inc. or equal

3. Emergency Generator Compartment

(a) Two (2) FPS 220 fluorescent fixtures.

(b) One (1) 2634-BU receptacle.

4. Toilet Spaces

One (1) FR 220DPJ fluorescent fixture in each toilet.

5. Exterior Cabin, Bulwark, and Stairways

(a) Four (4) # 729 B 100 watt incandescent fixtures complete with globes and brass guards located on interior of port and starboard bow and stern bulwarks.

(b) One (1) # 729 B 100 watt incandescent fixture complete with globe and brass guard to be located at entrance to each exterior door and ladder where they will provide optimum illumination of adjacent areas. Lights located on Pilot House Deck shall be controlled from panel P-1.

(c) Four (4) #729 B 100 watt incandescent fixtures complete with globes and brass guards located on side of superstructure where they will provide optimum illumination of superstructure but will not obstruct vehicle traffic.

(d) Four (4) #3100 B 20 amp, 125 VAC receptacles complete with plugs. One (1) each located port and starboard, bow and stern bulwark. Port and starboard receptacles shall be on separate circuits supplied from Panel P-4.

(e) Four (4) #729 B 100 watt incandescent fixtures. Two (2) located on each end of upper deck on handrails.

8. Engine Room and Access

(a) Fifteen (15) FPS 220 fluorescent fixtures located in engine room overhead where they will provide optimum illumination of engine room area.

(b) Two (2) FR 220DPJ fluorescent fixtures located in engineer's control station overhead.

(c) One (1) FPS 220 fluorescent fixture located at upper engine room access ladder landing.

(d) Four (4) #2634-U receptacles, three (3) located in engine room, one (1) located in engineer's control station.

9. Forepeaks

Four (4) (Two (2) in each compartment) #729 B 100 watt incandescent fixtures located where they will provide optimum illumination of compartment, controlled from one (1) waterproof switch located inside compartment.

10. Main Deck on Underside of Passenger Deck

Twelve (12) FPS 220 fluorescent fixtures. Six (6) Fixtures shall be on an emergency circuit.

11. Void No. 2-A and 2-B

(a) Seven (7) FPS 220 fluorescent fixtures in each void.

(b) One (1) #2634 BU receptacle in each void.

12. Void No 1-A and 1-B

(a) Four (4) FPS 220 fluorescent fixtures in each void.

(b) One (1) #2634 BU receptacle in each void.

Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all lamps, stainless steel fasteners, stainless steel conduit, foundation, brackets, switches, wiring, bulkhead and deck penetrations, etc., for a complete and operational system.

4.11 FLOODLIGHTS

(a) Provide and install four (4) Pauluhn, #HIDLS1IB floodlights complete with Part No. INX7007A surface mounts.

(b) One (1) floodlight shall be installed on each end of the Pilot House Deck and Passenger Cabin Deck as shown on plans.

(c) Floodlights shall be supplied from Pilot House Panel P-2 and controlled from switches in Pilot House Consoles.

(d) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all stainless steel fasteners, stainless steel conduit (pipe), watertight simplex receptacles, switches, circuit breakers, wiring, etc. for a complete and operational system.

4.12 RAMP RECEPTACLES

(a) Provide and install two (2) Pauluhn, 3W2P, 30 AMP, Cat #6009B-250 receptacles, one (1) on **each end** of bulwark as shown on plans.

(b) Contractor shall provide a 40 foot portable (S0 type) IEEE-45 approved cable, 3 conductor rated minimum of 40 AMPS at 50 Degrees C. Cable shall be fitted with a Pauluhn Cat. #6009 BP-250 plug on one end and a Russell Stoll Cat. #3809 B plug on opposite end. Store cable in storage locker as directed by the Inspector.

(c) Contractor shall provide and install all necessary ancillary material and equipment, including but not limited to all foundations, wiring, hangers, fasteners, stainless steel conduit, circuit breakers, etc. for a complete and operational system.

4.13 SHORE POWER CABLE AND RECEPTACLES

(a) Provide and install shore power cable circuits as shown on plans to provide 208 VAC 3 phase 200 amp service to the main distribution panel located in engine room from receptacles located at "A" End and "B" End Bows of the vessel on port bulwark interior. Final location of receptacles shall be approved by the Inspector.

(b) Provide and store onboard vessel as directed by Inspector a 100 foot long portable shore power cable of size and type to provide 208 VAC, 3 phase, 5 wire, 200 amp service and meet the requirements of 46 CFR 111.60-13. Cable shall be complete with plugs on each end compatible with shore power receptacles. Receptacles shall have hinged type covers.

(c) Receptacles, P/N DF2516FRA, and plugs, P/N DS2516MP, shall be of size and type to suit installation as manufactured by Russell & Stoll. Installation shall comply with 46 CFR 111.83, 111.30, as applicable, I.E.E.E. Standard # 45 as applicable, NEC Article 555 as applicable, and Section 4.1.

4.14 HAND DRYERS

(a) Provide and install in each passenger toilet one (1) Bobrick Model 709, 208 VAC, 1 PH, hand dryer. Final location shall be approve by the Inspector.

(b) Installation shall be complete in all respects, including but no limited to foundations, circuit breakers, wiring, etc.

4.15 TOILET HEATERS

(a) Provide and install in each passenger toilet one (1) Valad Model RRDM 11.0-1NM-T, 120 VAC, 1 PH, 1.0 KW, stainless steel construction, recessed wall mounted heater with tamper proof thermostat and marine terminal box. Bottom of heater shall be about 18" above deck and heater shall be recessed into bulkhead and joiner system.

(b) Installation shall be complete in all respects, including but not limited to foundations, circuit breakers, wiring, etc. for a complete and operational system.

4.16 ENGINE ROOM HEATERS

(a) Provide and install two (2) Chromalox, Model LUH-05-83 heaters with thermostats mounted on front of case in the Engine Room. Heaters shall be located at approximately Frame 10 "A" starboard and Frame 10 "B" port, outboard of 11'-3" longitudinals.

(b) Installation shall be complete in all respects, including but not limited to foundations, circuit breakers, wiring, etc. for a complete and operational system.

4.17 ENGINEER'S ALARM SYSTEM

(a) Provide and install the following main propulsion engines, generator engines, emergency generator engine, and watertight door alarm systems. All components shall be manufactured by Prime Mover Controls, Inc., 3600 Gilmore Way, Burnaby, B.C. Canada, V5G 4R8. Installation shall comply with all current U.S. Coast Guard regulations and specification Section 4.1.

1. Engineers Control Console

One (1) PMC type 8421-9002 Alarm Panel for operation from 24 VDC, including two (2) 19" flush mount racks with space for 64 LED alarm points and two (2) control modules complete with On-Light, test/silence push buttons and internal horn. System shall be configured to monitor the following active alarm points.

a. "A" main engine low oil pressure

b. "A" main engine high water temperature

c. "A" main engine cooling water low

d. "A" main engine oil temperature high

e. "A" main engine high differential pressure across lube oil filters

f. "A" main engine overspeed

g. "A" Red Gear oil pressure low

h. "A" Red Gear oil temp high

i. "B" main engine low oil pressure

j. "B" main engine high water temperature

k. "B" main engine cooling water low

l. "B" main engine oil temperature high

m. "B" main engine high differential pressure across lube oil filters

n. "B" main engine overspeed

o. "B" Red Gear oil pressure low

p. "B" Red Gear oil temp high

q. # 1 generator engine low oil pressure

r. # 1 generator engine high water temperature

s. # 1 generator engine overspeed

t. # 1 generator engine cooling water low

u. # 1 generator engine fuel pressure failure

v. # 1 generator engine lube oil temperature high

w. # 2 generator low oil pressure

x. # 2 generator engine high water temperature

y. # 2 generator engine overspeed

z. # 2 generator engine cooling water low

aa. # 2 generator engine fuel pressure failure

bb. # 2 generator engine lube oil temperature high

cc. E-generator engine low oil pressure

dd. E-generator engine high water temperature

ee. E-generator engine overspeed

ff. "A" main engine throttle power failure

gg. "B" main engine throttle power failure

hh. "A" end propulsion unit longitudinal control amplifier failure

ii. "A" end propulsion unit transverse control amplifier failure

jj. "A" end propulsion unit loss of primary A/C power

kk. "A" end propulsion unit loss of 24 VDC control power

ll. "B" end propulsion unit longitudinal control amplifier failure

mm. "B" end propulsion unit transverse control amplifier failure

nn. "B" end propulsion unit loss of primary A/C power

oo. "B" end propulsion unit loss of 24 VDC control power

pp. "A" Propeller control oil pressure low

qq. "A" Propeller control oil temp high

rr. "A" Propeller control oil level low

ss. "A" Propeller control oil filter fouling

tt. "A" Propeller lube oil pressure low

uu. "A" Propeller lube oil temp high

vv. "A" Propeller lube oil filter fouling

ww. "A" Propeller elevated oil tank level low

xx. "B" Propeller control oil pressure low

yy. "B" Propeller control oil temp high

zz. "B" Propeller control oil level low

aaa. "B" Propeller control oil filter fouling

bbb. "B" Propeller lube oil pressure low

ccc. "B" Propeller lube oil temp high

ddd. "B" Propeller lube oil filter fouling

eee. "B" Propeller elevated oil tank level low

fff. Ship service low air pressure (set point 90 psi)

ggg. A/C sea water supply off

hhh. MSD level high

iii. Alarm system power failure (in each panel)

2. Pilot House Console "A" End

One (1) PMC type 8421 Alarm Panel for operation from 24 VDC, flush mount 7" rack with space for 16 active alarm points and one (1) control module complete with On-Light, test/silence push buttons, internal horn and dimmer control.

3. Pilot House Console "B" End

One (1) PMC type 8421 Alarm Repeater with reflash for operation from 24 VDC, flush mount 7" rack with space for 16 active alarm points and one (1) control module complete with On-Light, test/silence push buttons, internal horn and dimmer control.

"A" and "B" End Pilot House systems shall be configured to monitor the following active alarm points:

a. E-generator engine low oil pressure

b. E-generator engine high water temperature

c. E-generator engine overspeed

d. W.T.D # 1 Open

e. W.T.D. #2 Open

f. W.T.D. # 3 Open

g. W.T.D. # 4 Open

h. W.T.D. # 5 Open

i. "A" end loss of primary AC power

j. "A" end loss of DC control power

k. "A" end transverse control amp fault

l. "A" end longitudinal control amp fault

m. "B" end loss of primary AC power

n. "B" end loss of DC control power

o. "B" end transverse control amp fault

p. "B" end longitudinal control amp fault

4. Engine Room

(a) Install in engine room one (1) 24 VDC operated electric horn type 8540-1312 and one (1) PMC type 8540-1400 (P/N KLN24-A) 24 VDC rotating beacon with blue transparent hood. Beacon and horn shall be installed to operate simultaneously with local alarm horn in engineer's console and be secured by silence button in alarm panel.

5. Main Deck

(a) Install on main deck superstructure at frame "O", one (1) 24 VDC operated electric horn PMC type 8540-1312.

(b) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all foundations, enclosures, wiring, fasteners, relays (for systems interface), all switches (ungrounded, Normally Closed in the normal operating condition) for A/C cooling water and watertight door positions (alarm in open position), hangers, watertight bulkhead and deck penetrations, etc. for a complete and operational system.

(c) Provide and store on board vessel as directed by Inspector one (1) set of manufacturer recommended spares for each panel installed and three (3) sets of manuals for each panel.

(d) Contractor shall provide the services of a PMC factory representative to verify the installation of all alarm system components and perform initial start up test and procedures.

NOTE: The alarm points required by this section are based on previous designs. The number of alarm points may change based on new equipment and machinery specified by this contract. The Contractor shall survey all machinery, equipment and control systems to verify the exact requirements for any and all existing and new alarm point requirements which may be required due to changes in the propellers, propeller control systems, throttle controls, main engines and reduction gears, ships service generators and emergency generator. Any additional alarms or changes in the alarm system shall be noted by the Contractor and provided as a part of this Contract.

4.18 PILOT HOUSE WINDOW WIPERS

(a) Provide and install Two (2) Wynn, Straight Line Heavy Duty Type "1000", 120 VAC window wipers with 31.5" blades as supplied by Marktec, Inc., 27 Bower Lane, Chatham, New Jersey, (201) 635-0040, complete with individual flush mounted variable speed control switch, blade, arm, etc. Wipers shall be installed on each of the transverse pilot house windows.

(b) Wiper controls and motor shall be supplied from circuit breaker of type and size required, located in panel P-2.

(c) Provide and store on board vessel as directed by Inspector, three (3) spare wiper blades and four (4) sets of parts/maintenance manuals.

(d) Installation shall be complete in all respects, including but not limited to all stainless steel fasteners, stainless steel pipe, wiring, circuit breaker, etc.

4.19 SOUND POWERED TELEPHONE SYSTEM

(a) Provide and install a Sound Powered Telephone System to provide communication between the following locations:

1 Station - Pilot House "A" End

2 Station - Pilot House "B" End

3 Station – Bow Station "A" End

4 Station – Bow Station "B" End

5 Station – Engineer's Control Station

6 Station – Engine Room (A-531 Jack Box)

7 Station – VSPA and VSPB Space Unit (A-531 Jack Box in Each Space)

(b) Telephone system components shall be manufactured by Hose-McCann Telephone Co., 9 Smith Street, Englewood, N.J., and consist of the following components for the space designated:

1. # 1 Station – one (1) Model SF-8S located in "A" End Pilot House Console.
2. # 2 Station – one (1) Model SF-8S located in "B" End Pilot House Console.
3. # 3 Station – one (1) Model MWT-86 located on inboard port forward bulwark of "A" End, in weather-tight enclosure as directed by Inspector.
4. # 4 Station – one (1) Model MWT-86 located on inboard port forward bulwark of "B" End, in weather-tight enclosure as directed by Inspector.
5. # 5 Station – one (1) Model SFLR-PBC-8S located in Engineer's Console.

6. # 6 Station – two (2) 702019-375-4CC, Type H200/U, Head-Chest sets with 25 feet of rubber covered cord and #H-39A Plug attached. One (1) #G15A Jack Box located in engine room as directed by Inspector.

7. # 7 Station - One (1) #G15A Jack Box (total of two) adjacent to each Propulsion Unit as directed by the Inspector.

(c) Contractor shall provide and install on Station # 5 telephone a remote rotating beacon light and horn located within the engine room where it may be seen and heard throughout the space. Beacon and horn shall be configured so that they will operate continually until they are secured by a push button relay switch located in Station # 5 telephone. Rotating beacon shall be provided with a amber lens. Rotating Beacon shall be model #121S120ASB as manufactured by Federal Signal. Horn shall be model #350WB, 120 VAC, as manufactured by Federal Signal. Beacon and horn shall be supplied from emergency electrical system feeder circuit.

(d) Installation of telephone and telephone system shall be in accordance with 46 CFR 113.30 and Specification Section 4.1.

(e) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all foundations, wiring, stainless steel pipe, stainless steel fasteners, labels attached to each telephone or telephone jack, etc.

4.20 GENERAL ALARM SYSTEM

(a) Provide and install a General Alarm System in accordance with 46 CFR 113.25. System components shall be manufactured by Hose McCann Telephone Company.

(b) Contractor shall provide and install size 8D, 12 VDC battery system, battery box and battery charger as required by Item 4.3. Battery system shall be located in emergency generator room.

(c) Alarm bells shall be #DTU-8 type with brass gongs location as follows:

1 - Passenger Lounge

1 - Engine Room at Frame # 0

2- One (1) in void 2 "A" and one (1) in void 2 "B" at Frame #15

2 - One (1) in void 1 "A" and one (1) in void 1 "B" at Frame #32

2 – One (1) on each end of superstructure on passenger cabin deck.

(d) Contact makers shall be Model 7000 located as follows:

1- "A" end Pilot House console

1- "B" end Pilot House console

1- Emergency Generator Room

(e) Contractor shall provide and install one (1) Model # 121S120ASB Federal Signal rotating beacon complete with transparent red lens in engine room. Construction and installation shall comply with 46 CFR 113.25-10. Beacon shall be supplied from emergency electrical system feeder circuit and shall be activated by non-latching relay.

(f) Contractor shall provide and install all other necessary ancillary materials and equipment, including but not limited to all storage batteries, battery chargers, battery boxes, relays, feeder circuit junction boxes, fuse panels, disconnects, foundations, stainless steel conduit (pipe), stainless steel fasteners, wiring, etc. for a complete and operational system and comply with Specification Item 4.1

4.21 PUBLIC ADDRESS SYSTEM

(a) Provide and install the following equipment;

One (1) Bogen Model C100C, Amplifier

Two (2) Bogen Model MBS 1000, Pedestal Mount Microphones

Three (3) Bogen Model S86T725PG8WVR Flush Mount Speakers w/grill

Nine (9) Bogen Model SPT 30-A Watertight Speakers

(b) System shall be arranged so that sound is conveyed to all areas equally without objectionable distortion. Sound level shall be adjustable to all speakers. Amplifier shall be shelf mounted at "A" pilot house console. Locate one (1) microphone at each pilot house console. Microphone located at "B" console shall be provided with a microphone jack flush mounted in console. Location to be approved by Inspector.

(c) Speakers shall be located in the following locations;

2 - Passenger Lounge (interior flush mount)

1- Engineer's Control Station (interior flush mount)

4 - Superstructure exterior, one at each end of passenger lounge and one on each side of superstructure at Fr. 0 main deck.(exterior waterproof)

5- Below Main Deck, one located at frame 0, one located at frame 20 A, one located at Frame 20 B, one located at frame 32 A and one located at frame 32 B.

Note: Final location shall be approved by Inspector.

(d) Contractor shall provide and install all necessary ancillary material and equipment, including but not limited to all wiring, stainless steel conduit (pipe), simplex receptacles, circuit breakers, plugs, foundations, etc. for a complete operational system and comply with Specification Item 4.1.

4.22 AUTOMATIC FOG TIMER

(a) Provide and install two (2) fog signal timers to activate air horn. One unit shall be installed in each Pilot House Console as directed by Inspector Units shall be Model M-511 manufactured by Kahlenberg Brothers Co., and operate on 120 VAC.

(b) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all wiring, circuit breakers, foundations, fasteners, hardware, etc. for a complete and operational system.

4.23 STATE RADIOS

(a) Provide and install the following equipment;

Two (2) Motorola CDM 750 Mobile Radios

Two (2) Motorola Model TAB1002 1/4 wave 30-54 MHz antennas

Two (2) Newmar Model 115-12-20A, 110 VAC to 12 VDC power supplies

(b) One (1) radio shall be installed in each Pilot House Console. Antennas shall be installed on top of Pilot House. Power supplies shall be installed inside each Pilot House Console. Final location shall be approved by the Inspector.

(c) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all cable (power and coaxial), foundations, clips, brackets, watertight penetrations, etc., for complete and operational system.

(d) Contractor shall provide the services of a Motorola factory authorized representative to accomplish all final connections and test system. Installation and testing shall comply with applicable Federal Communication Commission Specifications.

4.24 FATHOMETERS

(a) Provide and install the following equipment;

Two (2) Furuno Model FCV 667 fathometers

Two (2) Furuno Model 525T-BSC transducers

Two (2) Newmar Model 115-12-6E power supplies

(b) One (1) fathometer shall be installed on each Pilot House Console. One power supply shall be installed in each Pilot House Console. One (1) transducer shall be installed at each end of the vessel, at the bottom of the skeg at approximately Frame 47 A and B.
Stainless steel, Sch. 80 pipe shall be used for cable conduit and shall be carried from the transducer pipe enclosures at the bottom to the skeg to a point at least 8 feet ABL in the forepeak area. Pipe conduit shall be maintained watertight throughout its length. Transducer cables may be carried in open wireways from the 8 feet ABL point onward. Final location of fathometers and transducers shall be approved by the Inspector.

(c) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all cable, hangers, foundations, wiring, watertight penetrations, circuit breakers, etc. for a complete and operational system.

(d) Contractor shall provide the services of a Furuno factory authorized representative to accomplish all final connections and test system.

4.25 VHF MARINE RADIOS

(a) Provide and install the following equipment;

Two (2) ICOM Model IC-M402S marine radios

Two (2) Shakespeare Model 399-1 antennas w/Model 101 mounts

Two (2) Newmar Model 115-12-8 power supplies

(b) One (1) radio shall be installed above each Pilot House Console. One (1) antenna shall be installed on Pilot House top at each end of Pilot House. One (1) power supply shall be installed in each Pilot House Console. Final location of radios and antennas shall be approved by the Inspector.

(c) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all cable, wiring, hangers, foundations, watertight penetrations, circuit breakers, etc. for a complete and operational system.

(d) Contractor shall provide the services of an ICOM factory authorized representative to accomplish all final connections and test system including final inspection and test by Federal Communications Commission (FCC).

(e) Contractor shall acquire for the Owner FCC Station License and Radio Safety Certificates for this installation.

4.26 RADARS

(a) Provide and install the following equipment;

Two (2) Furuno Model FR1942MKII, 6KW radars w/10 inch CRT display and 4 foot open array antennas w/15 m signal cable.

Two (2) Furuno Model RU3423 power supplies.

(b) One (1) Radar Display shall be installed on top of each Pilot House Console. One Radar Antenna shall be installed on top of Pilot House at each end of Pilot House. One (1) Power Supply shall be installed in each Pilot House Console. Final location of Displays and Antennas shall be approved by the Inspector.

(c) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all wiring, foundations, antenna masts, stainless steel conduit, watertight penetrations, circuit breakers, etc. for a complete operational system.

(d) Contractor shall provide the services of a Furuno factory authorized technician to accomplish all final connections and test system including any required FCC test and inspections.

4.27 GPS SYSTEMS

(a) Provide and install the following equipment;

Two (2) Furuno Model GP1850WD GPS units w/GPA019 antenna w/10m cable.

Two (2) Newmar 115-12-6E Power Supplies.

Two (2) sets of Navionics Chart #US185T32, latest release.

(b) GPS display units shall be installed on top of A and B end Pilot House Consoles. Antennas shall be installed on top of Pilot House. Final location shall be approved by the Inspector.

(c) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all cable, hangers, foundations, wiring, watertight penetrations, etc. for a complete and operational system.

(d) Contractor shall provide the services of a Furuno factorized technician to accomplish all final connections and test system. Technician shall install Navionics Chart #US185T32 and prove system operational.

4.28 WEATHER MONITORING SYSTEM

(a) Provide and install the following equipment;

One (1) Davis Weather Monitor II Model 7440 complete w/external anemometer and temperature sensor.

(b) Display unit shall be mounted in Pilot House on port side at approximately Frame 0. External anemometer and temperature sensor shall be mounted on Pilot House Top.

(c) Contractor shall provide and install all necessary ancillary materials and equipment, including but not limited to all wiring, hangers, hardware, foundations, watertight penetrations, etc. for a complete and operational system.

4.29 PASSENGER INFORMATION SYSTEMS

(a) Provide and install one (1) Dell "Latitude" Lap Top Computer with windows XP Operating System on top of A end Pilot House Console. Power to computer shall be supplied from circuit breaker in Pilot House Panel P-2.

(b) Provide and install one (1) Dell 2001FP, 20.1" Flat Panel LCD Monitor with height adjustable stand on A end Passenger Lounge transverse bulkhead. Final location shall be approved by the Inspector.

(c) Provide and install one (1) SVGA cable between Lap Top Computer and Flat Panel Monitor.

(d) Provide and install one (1) shielded audio cable between Lap Top Computer and Flat Panel Monitor. Coil and stow cable behind bulkhead panel as directed by the Inspector.

(e) Provide and install one (1) shielded audio cable between Lap Top Computer and Public Address System Amplifier. Coil and stow cable inside Pilot House Console as directed by the Inspector.

(f) Installation shall be complete including all mounts, brackets, foundations, shielded cables, circuit breaker, etc.

4.30 DIRECT CURRENT DISTRIBUTION PANEL

(a) The Contractor shall survey all 12 and 24 VDC loads required by these specifications and the plans and all loads shown of vendor drawings. The survey shall include but not be limited to all alarm systems, Voith/Matthews Marine Controls, main engine power supplies, main engine throttle controls, ship service switchboard controls, fuel level gauges, engine starting batteries, battery bank selector switch, General Alarm System battery, etc.

(b) The Contractor shall develop detailed drawings for all equipment and circuits in accordance with the requirements of 46 CFR 110.25 and Sections 1.10 and 1.11 of these specifications. The Contractor may assign these plans as sheet 2 of the existing Elementary Wiring Diagram.

(c) The Contractor shall provide and install on/off type toggle switches and approved type DC Circuit Breakers for all required circuits. No circuit breakers or toggle switches are required for the engine starting circuits. The Contractor may utilize the existing battery bank selector switch enclosure required by Section 4.3 of these specifications for the installation of switches and breakers or provide a separate NEMA 4X enclosure immediately adjacent to the battery bank selector switch.

(d) The installation shall include but not be limited to all enclosures, wiring, circuit breakers, switches, buss work, terminal strips, identification and labeling, terminals, etc., for a complete and operational system.

4.31 SPARE CABLE

Provide and install one (1) 20 pair twisted-shielded multi-conductor cable from inside A end Pilot House Console to the overhead in Engine Room at Frame 0 on centerline. Cable shall terminate at each end inside a NEMA 4X junction box at least 6" x 6". Conductor size shall not be less than 18 gage.

SECTION V

CONSTRUCTION SPECIFICATIONS

PROJECT WBS 34132.1.6

5.0 PAINTING AND DESIGNATIONS

5.1 GENERAL

(a) The following paragraphs set forth general conditions and/or items that shall be complied with during accomplishment of this contract. Specific or detailed requirements are stated elsewhere herein.

5.1-1 SURFACE PREPARATION AND COATING REFERENCE

(a) All surface preparations and coating as specified herein shall be accomplished in strict accordance with and as recommended by the, Steel Structure Paint Council, Ameron/Devoe Marine Coatings Company, and the Inspector. The Owner reserves the right to select the standards used.

5.1-2 NEW PLATES, SHAPES, FOUNDATIONS, ETC.

(a) Prior to installation of new plates, shapes, pipe hangers, foundations, and sub-assemblies, sandblast as required by Section 5.2 and apply one (1) coat of inorganic zinc.

(b) Upon completion of installation, remove all construction aids, repair all scars, remove all weld spatter, flux and/or scale by shotblasting and apply inorganic zinc to disturbed areas.

(c) **ALL inorganic zinc applied shall be Ameron DSP-1Q40000 zinc.**

5.1-3 INACCESSIBLE AREAS

(a) Where structure, machinery, or equipment will cover other structure in a manner that prevents access for maintenance, both structures shall be cleaned prior to installation of the covering structure and both coated with one (1) coat of inorganic zinc followed by the applicable paint schedule as applied to the surrounding area as specified elsewhere herein.

5.1-4 REMOVAL OF CONTAMINATES

(a) All grease, dirt, and other contaminating properties shall be removed from surfaces before painting: All loose, blistered, cracked paint, all rust and mil scale shall be removed from surfaces to be painted by appropriate methods as specified elsewhere herein, and spot primed with appropriate primers prior to subsequent coatings.

(1) All zinc primers shall be fully cured and all oxidation removed prior to subsequent coatings.

(2) All coats of paint applied must be compatible with primers and other parts.

(3) Sufficient time for proper drying or tacking shall be allowed between coats.

(4) All painting shall be accomplished to protect all surfaces liable to water, either immersion, seepage or condensation.

5.1-5 SHIFTING OF VESSEL ON BLOCKS

(a) The vessel shall be shifted on blocks so that complete painting of the bottom area may be accomplished. Areas in way of block spots shall be shotblasted and coating system brought up as specified in section 5.2-2 herein.

5.1-6 TYPE COATINGS

(a) All paints used, unless otherwise specified, shall be of the best quality for marine

application and applied in strict accordance with Ameron/Devoe recommendations as directed by manufacturer's representative or the Inspector.

(b) Protective coatings as specified in the following sections are acceptable to the owner.

(c) Notify owner in writing which manufacturer's coating system is to be supplied prior to purchase or application.

(d) Provide Owner's Inspector with one (1) copy of painting report prior to each application of paint.

(e) The Owner reserves the right to approve the manufacturer of the coating system used and all paint for work not described or called for in this section but which is required and shall be accomplished using a paint schedule designed for the purpose intended and within the applicable standards.

5.1-7 WEATHER CONDITIONS – MINIMUM STANDARDS

(a) No paint shall be applied when weather conditions are below the minimum recommended standards as prescribed by Ameron/Devoe product data sheets. Supplier shall provide a factory authorized applications technician to accept or reject surface preparation and environmental conditions prior to paint applications. In the event of uncertain or unfavorable weather conditions, the contractor shall advise and discuss conditions and paint applications with the Inspector prior to applying paint. Conditions of the hull, such as condensation, will prohibit paint application. The Inspector shall stop or delay all painting operation until more favorable weather conditions exist.

5.1-8 PAINT APPLICATION

(a) All paint may be sprayed, brushed, or rolled on as the contractor selects. Paint may not be thinned, except as approved by the Inspector. Any coat applied without measurement or inspection of previous coats by Inspector will not be recognized as applied. The contractor shall repair, as specified elsewhere herein, any areas damaged due to the use of destructive testing techniques, if used.

(b) Protect all hull anodes, transducers, propellers and bearing surfaces from paint coatings.

5.1-9 FINAL COATING APPLICATION ABOVE WATERLINE

(a) The final coat of finish paint above the water line shall not be applied until all other work has been completed and the vessel is otherwise ready for delivery. The final coat shall be applied by spraying only.

5.1-10 ANTI-FOULING SPECIAL CONSIDERATION

(a) Should the vessel remain undelivered, excluding delivery time, three (3) months after launching, it shall be drydocked, surface prepared and one (1) additional coat of anti-fouling paint applied.

(b) The 6' 6" waterline of the vessel shall be defined by intermittent weld beads on approximately four (4) foot centers.

5.2 SHOTBLASTING AND CLEANING

5.2-1 SHOTBLASTING

(a) All steel surfaces on the exterior of the hull, the entire interior of the hull, including all void spaces, the engine room, steering gear compartment, entire superstructure, main deck,

overhang, bulwarks, etc. shall be shotblasted to near white metal, SSPC-SP-lO.

(b) Immediately after shotblasting all shotblast material shall be completely removed from surfaces by sweeping and blowing with dry compressed air or other suitable means and one (1) coat of inorganic zinc applied to prevent rusting. All shotblast material must be completely removed from surfaces prior to any coating being applied.

(c) Following general directions shall be accomplished for the preparation of surfaces to receive the self curing inorganic zinc coatings:

(1) Round off all rough welds and sharp steel edges, remove weld spatter "BB's".

(2) Dry-abrasive blast all pits and depressions, remove all mill scale, rust, rust scale, grease, paint or foreign matter. Surface profile from abrasive blasting should be similar to that obtained with fresh steel grit (G-40 size), steel shot (S-230 size), graded flint or silica sand (30-60 mesh), under nozzle pressure of 100 psi. If abrasives are reused they shall be cleaned of contamination. Do not reuse sand or flint abrasives.

(3) Apply inorganic zinc coating as soon as possible to prevent blasted surfaces from rusting. Keep surfaces moisture-free until coated. Keep oil, grease or other organic matter off surface before coating. Spot blast to remove any contamination. Do not solvent-wipe.

(d) During blasting operations, seal off all deck machinery, ventilation fans and any other equipment that is subject to damage from sandblasting operations. The engine room and all openings thereto are to be sealed off prior to blasting if any machinery is installed, and kept sealed for the duration of blasting operations.

5.2-2 DISTURBED SURFACE REPAIRS

(a) Any painted surface that is disturbed during construction or outfitting shall be restored to suit the adjacent area.

(1) Remove any damaged coating system by sanding to a sound anchor profile.

(2) Sand surrounding paint to present an even contour with edges feathered and at least two (2) of the three (3) underlying coats separately visible and distinct from each other. Each layer or coat shall be a minimum of 2" wide.

(3) Where the disturbed area has penetrated through to the substrate any scarred or damaged metal shall be repaired and a proper anchor profile renewed.

(4) Restore damaged epoxy coatings systems to a finished surface profile equal to adjacent and surrounding areas. Each coat to be as specified elsewhere herein.

(5) Apply top coats as required elsewhere herein. **First coat of top coat to be applied while last coat of epoxy is still tacky.**

(b) Finished paint shall blend with adjacent areas and present a smooth even profile free of runs, contamination, or other unsightly coating defects.

5.2-3 CLEAN UP

(a) After all construction and outfitting has been completed and just prior to vessel departure/delivery, contractor shall remove all paint from all windows, slides, and free up moving sashes.

(b) Contractor shall remove paint from all glass and bright work. All bright work shall be polished after all other work has been completed and vessel is otherwise ready for delivery.

(c) Remove all paint and paint over-spray from machinery components, machinery label plates, signs, threads of wing nuts and bolts used for securing vent and storm covers etc., hinge pins, shafting, door knobs, latching mechanisms, actuator rods, valve stems, etc.

(d) Vessel shall be thoroughly cleaned throughout including but not limited to the removal of all dust, grit, grease, solvents, and lint from all spaces, machinery, components, structure, void vents, drains, bilges, paneling, furnishings, deck covering, etc.

(e) Wash down with fresh water and dry all decks, superstructure and bilges prior to final delivery of vessel.

5.3 PAINT SCHEDULE

5.3-1 HULL EXTERIOR BELOW WATERLINE AND 6" ABOVE INCLUDING SEA CHESTS

(a) Prepare surface in accordance with section 5.2-1

Do not apply inorganic zinc below W/L

(b) Apply one (1) coat Devran 230 (230K2904) gray @ 4 mils DFT.

(c) Apply one (1) coat Devran 230 (230K7821) red @ 4 mils DFT.

(d) Apply one (1) coat Devran 230 (230K2904) gray @ 4 mils DFT.

(e) Apply one (1) coat Devran 214 Anti-fouling (214S4987) blue @ 4 mils DFT.

(f) Apply one (1) coat Devran 214 Anti-fouling (214S7061) red @ 4 mils DFT.

Note: First coat of Devran 214 shall be applied while third coat of Devran 230 is tacky.

5.3-2 HULL EXTERIOR 6" ABOVE WATERLINE INCLUDING RUBRAIL

(a) Prepare surface in accordance with section 5.2-1.

(b) Apply one (1) coat Devran 230 (230K2904) gray @ 4 mils DFT.

(c) Apply one (1) coat Devran 230 (230K7821) red @ 4 mils DFT.

(d) Apply one (1) coat Devran 230 (230K2904) gray @ 4 mils DFT.

(e) Apply two (2) coats Devran 229 (229K9903) black @ 2 Mils DFT each coat.

Note: First coat of Devran 229 shall be applied while third coat of Devran 230 is tacky.

5.3-3 SUPERSTRUCTURE, MAIN DECK, AND ABOVE, COMPLETE EXTERIOR INCLUDING, BUT NOT LIMITED TO, BULWARK EXTERIOR, FASHION PLATE, CABIN EXTERIOR BULKHEADS, HAND RAILS, FITTINGS, UNDERSIDE OF PASSENGER DECK, ETC.

(a) Prepare surface in accordance with item 5.2-1

(b) Apply one (1) coat Devran 230 (230K2904) gray @ 4 mils DFT.

(c) Apply one (1) coat Devran 230 (230K7821) red @ 4 mils DFT.

(d) Apply one (1) coat Devran 230 (230K2904) gray @ 4 mils DFT.

(e) Apply two (2) coats Devran 229 (229K3501) white @ 2 mils DFT each coat.

Note: First coat of Devran 229 shall be applied while third coat of Devran 230 is tacky.

5.3-4 BULWARK INTERIOR & TOP HAND RAILS, ALL EXTERIOR TRIM

(a) Prepare surface in accordance with section 5.2-1.

(b) Apply one (1) coat Devran 230 (230K2904) gray @ 4 mils DFT.

(c) Apply one (1) coat Devran 230 (230K7821) red @ 4 mils DFT.

(d) Apply one (1) coat Devran 230 (230K2904) gray @ 4 mils DFT.

(e) Apply two (2) coats Devran 229 (229K9903) black @ 2 mils DFT each coat to interior of bulwark, stanchions, interior and exterior of chain lockers, void vents piping and

fixtures adjacent to bulwark, tire guards at bulwark and cabin, anchor chains, top hand rails and all trim to suit vessel.

5.3-5 SUPERSTRUCTURE INTERIOR INCLUDING PILOT HOUSE, PASSENGERS' LOUNGE, AND ALL TOILETS

(a) Prepare surface in accordance with item 5.2-1

(b) Apply one (1) coat Devran 235 (235K1642) buff @ 4 mils DFT.

(c) Apply one (1) coat Devran 235 (235K2504) gray @ 4 mils DFT.

(d) Apply one (1) coat Devran 235 (235K3501) white @ 4 mils DFT.

(e) Apply two (2) coats Devran 229 (22563) Beach Sand @ 1.5 Mils DFT to all surfaces not concealed by incombustible panels.

5.3-6 ENGINE ROOM, ENGINE ROOM ACCESS, INTERIOR AND EXTERIOR OF ENGINEER'S OPERATING STATION

(a) Prepare surface in accordance with item 5.2-1.

(b) Apply one (1) coat Devran 235 (235K1642) buff @ 4 mils DFT.

(c) Apply one (1) coat Devran 235 (235K3501) white @ 4 mils DFT.

(d) Apply one (1) coat Devran 235 (235K2504) gray @ 4 mils DFT.

(e) Apply one (1) coat Devran 235 (235K7821) red @ 4 mils DFT to bilges up to grating line, including grating framework, all piping, foundations, structure, etc.

(f) Apply two (2) coats Devran 229 (229K3501) white @ 2.0 mils DFT each coat to entire engine room above grating line including overhead (after installation of insulation), bulkheads, hull plating, pipe stanchions, foundations, etc.

(g) Apply one (1) coat Devran 235 (235K2504) gray @ 4 mils DFT to Engine Room Access Deck after all other work has been complete. Final coat shall have non-skid additive.

(h) All equipment, engines, reduction gears and generators, pumps and motors, air compressors and tanks shall be coated with gloss enamel using existing colors. Where coatings will be on hot surfaces the coating shall be engine enamel. Hand wheels shall be color coded as indicated elsewhere herein. DO NOT PAINT ALUMINUM DECK PLATING. ALL PLATING IN ALL SPACES SHALL REMAIN SECURELY MASKED AND PROTECTED FROM TIME OF INSTALLATION UNTIL ALL WORK IS COMPLETE AND THE VESSEL IS OTHERWISE READY FOR SEA TRIALS.

5.3-7 VOIDS INCLUDING PROPELLER COMPARTMENTS, FUEL TANK AND M.S.D. COMPARTMENTS, FORE PEAKS, AND EXTERIOR OF FUEL TANKS AND POTABLE WATER TANKS

(a) Prepare surface in accordance with section 5.2-1.

(b) Apply one (1) coat Devran 235 (235K1642) buff @ 4 mils DFT.

(c) Apply one (1) coat Devran 235 (235K3501) white @ 4 mils DFT.

(d) Apply one (1) coat Devran 235 (235K2504) gray @ 4 mils DFT.

(e) Apply two (2) coats Devran 229 (229K3501) white @ 2.0 mils DFT each coat to entire area including overhead (after installation of insulation as applicable), bulkheads, hull plating, pipe stanchions, foundations, etc. Final coat of white shall not be applied below upper chine until all other work is complete in the affected space.

DO NOT PAINT ALUMINUM DECK PLATING

5.3-8 POTABLE WATER TANK INTERIOR

(a) Prepare surface in accordance with section 5.2-1.

(b) Apply one (1) coat Devran 233 (233K1642) buff @ 4 mils DFT.

(c) Apply one (1) coat Devran 233 (233K3501) white @ 4 mils DFT.

(d) Apply one (1) coat Devran 233 (233K1642) buff @ 4 mils DFT.

(e) Apply one (1) coat Devran 233 (233K3501) white @ 4 mils DFT.

(f) Provide forced ventilation in tank for a minimum of seven (7) days to allow proper cure time.

(g) Disinfect tank to suit local health standards and procedures for potable water. Samples shall be taken from all faucets and drinking fountains for testing.

(h) Should a local procedure be non-existent the Contractor may obtain an accepted procedure for disinfecting tank from the Inspector.

(i) Provide the Inspector with two (2) legible copies of Health Department's test report.

(j) Tank shall be full of potable water upon vessel's delivery.

NOTE: Any sealants used in potable water system shall be non-toxic and meet Health Department standards for use intended.

5.3-9 MAIN DECK, UPPER DECK, AND BRIDGE DECK EXTERIORS

(a) Prepare surface in accordance with item 5.2-1.

(b) Apply one (1) coat Devran 230 (230K2904) gray @ 4 mils DFT.

(c) Apply one (1) coat Devran 230 (230K7821) red @ 4 mils DFT.

(d) Apply two (2) coats Devran 230 (230K2904) gray @ 4 mils DFT. Second coat shall have non-skid additive and shall be applied by spraying. Inspector shall approve non-skid additive.

5.3-10 EMERGENCY GENERATOR ROOM (INCLUDING DECK)

(a) Prepare surface in accordance with section 5.2-1.

(b) Apply one (1) coat Devran 235 (235K1642) buff @ 4 mils DFT.

(c) Apply one (1) coat Devran 235 (235K2504) gray @ 4 mils DFT.

(d) Apply one (1) coat Devran 235 (235K3501) white @ 4 mils DFT.

(e) Apply two (2) coats Devran 229 (229K3501) white @ 2 mils DFT each coat to all insulated surfaces and door interior surfaces. Final coat of white shall not be applied until all other work is complete in compartment.

(f) Apply one (1) coat Devran 235 (235K2504) gray @ 4 mils DFT to deck after all other work has been completed. Final coat shall have non-skid additive applied. Inspector shall approve non-skid additive.

(g) All equipment, engine, generator, tank, and panels shall be coated with gloss enamel using existing colors. Where coatings will be on hot surfaces the coating shall be engine enamel.

5.3-11 PILOT HOUSE TOP

(a) Prepare surface in accordance with item 5.2-1.

(b) Apply one (1) coat Devran 230 (230K2904) gray @ 4 mils DFT.

(c) Apply one (1) coat Devran 230 (230K7821) red @ 4 mils DFT.

(d) Apply two (2) coats Devran 230 (230K2904) gray @ 4 mils DFT. Second coat shall have non-skid additive and shall be applied by spraying. Inspector shall approve non-skid additive.

(e) Apply two (2) coats Devran 229 (229K9903) black @ 2 mils DFT to all foundations, kick pipes, mast, bases, etc. Side light screens shall be painted MATTE Black.

5.3-12 TOILETS

(a) Prepare entire surface in accordance with Section 5.2-1.

(b) Apply one (1) coat Devran 235 (235K1642) buff @ 4 mils DFT.

(c) Apply one (1) coat Devran 235 (235K3501) white @ 4 mils DFT.

(d) Apply one (1) coat Devran 235 (235K2504) gray @ 4 mils DFT.

(e) Apply one (1) coat Devran 235 (235K2504) gray @ 4 mils DFT. to decks after all other work has been completed. Final coat shall have non-skid additive.

5.3-13 MISCELLANEOUS COATING AND TRIM

(a) Any surface not specified elsewhere herein but is required and/or identified by the Inspector to be coated shall receive proper surface preparation, proper paint schedule designed for purpose intended, and proper trim to suit adjacent paint schedules and color schemes. These areas shall include but not be limited to: smokestacks, angle framing, bracing, supports, pipes, vents and louvers, wheel guards, safety and hand rails, wire fencing and bracing of same, ladders, fixtures, anchors and chains, chain boxes and lids (interior/exterior), davits, and mounting supports for same; chocks, cleats, safety chains, life preserver boxes and lids (interior/ exterior), masts, sounding tubes, reach rods, vent covers (interior/exterior), storm covers (interior/exterior), canopy frames and supports, doors (interior/exterior), bolted and quick acting hatches

(interior/exterior), CO2 systems (fixed & portable) brackets, foundations, supports, piping, hangers, pull cable conduit, fire hose stations, hangers, supports, piping, fuel oil, lube oil, water fill pipes and cofferdams for same, stanchions, benches and frames, tables and frames, cabinets and shelves, lockers and shelves, wooden frames, molding and pedestals; rescue boat and foundation; high hats, (cofferdams) for keel coolers and CAPAC anodes. and fair waters and guards for the same, ETC.

SPECIAL TRIM Ferry will have special trim stripes painted on superstructure and bulwarks. Contractor shall assume that at least two different colors of paint will be applied. Special trim is based on colors of a North Carolina University to be selected at a later date. Accent stripes to be similar to the existing Ferry Fort Fisher.

5.4 LABELING AND MARKINGS

5.4-1 SHIP'S NAME, HAILING PORT, OFFICIAL NUMBER AND DRAFT MARKS

(a) Install Ship's name, port and starboard sides of the bulwark at "A" end bow. Letters for name shall be cut from 1/4" steel plate 12" high continuously welded in place and then be painted contrasting color and in accordance with 46 CFR 67.123.

(b) Ship's name and hailing port shall be placed on the port and starboard sides of bulwark at "B" end bow. Letters shall be 6" high cut from 1/4" steel plate and be continuously welded in place, then painted contrasting color in accordance with 46 CFR 67.123.

(c) Draft marks shall be Arabic numerals 6" in projected height. Marks shall be cut from 1/4" steel plate and be continuously welded in place on port and starboard sides of "A" end and "B" end bow. The bottom of each figure shall be at the even foot above the bottom of the keel in accordance with 46 CFR 78.50-10.

(d) Vessel's official number shall be placed on the engine room bulkhead at frame #12 "A". Letters and numbers shall be 3" high, cut from 1/4" steel plate and be continuously welded in place in accordance with 46 CFR 67.121. Final location shall be approved by the Inspector.

5.4-2 BUILDERS PLAQUE

(a) A builder's data plate approximately 14" x 20" of cast bronze shall be provided and installed in a location as directed by the Inspector.

(b) Data plate shall contain vessel's name, year built, Owner's name, Builder's name, Governor's name, and two (2) selected officials' names.

5.4-3 NAME BOARDS

(a) Two (2) name boards shall be provided of suitable size with letters cut-in and painted. Boards shall be mounted on bridge deck railing port and starboard.

(b) Name boards shall be minimum 3/4" thick mahogany boards properly stained, sanded and varnished for exterior use.

5.4-4 LABELING AND MARKING OF SAFETY AND OTHER EQUIPMENT

(a) Life rings, life preservers, IBA's, rescue boat, oars, fire axes, fire hoses, fire extinguishers and other lettering shall be accomplished as normally required for a vessel of this class and as required by 46 CFR Subchapters "H "and "W " if not specifically covered elsewhere herein.

(b) All valves and operating gear shall be labeled to indicate the service used. Labels to be brass material, machine engraved, with letters of size to suit condition and easy legibility. Labels shall be secured to handwheels using handwheel nut. See 46 CFR 78.47-38 & Section 5.4-8.

(c) All wiring cables shall be labeled with embossed metal tags secured to cable at sufficient intervals to allow ready identification of cable and circuit if it should become necessary to trace circuits after shipboard installation is complete. (SEE SECTION IV)

(d) Label plates marking the centerline and six (6) foot mark above B/L to be fitted on the after side of the engine room forward bulkhead.

(e) Paint lines to indicate vehicle runways and safety zones on decks, colors and markings as specified by the Inspector, and 46 CFR 78.40-1.

(f) "No Smoking" signs as required by 46 CFR78.40-10.

(g) "General Alarm" identifications as directed by 46 CFR 78.47-5 and 78.47-7.

(h) Watertight doors as required by 46 CFR 78.47-37 (a) and (b) all other doors shall be marked as required by 46 CFR 78.47-35.

(i) Fire station labels as required by 46 CFR 78.47- 20.

(j) "E" on all emergency and exit lights as required by 46 CFR 78.47-33.

(k) Signs to indicate location of life jacket stowage.(→To Life Jackets or Life Jackets Stored on Upper Decks →)

(l) Frame number on forward and after side of each watertight bulkhead, three (3) inches high, in contrasting colors as directed by Inspector.

(m) Label entrances to Passenger Lounge, Toilets, Emergency Generator Room, etc,.

(n) Provide and install 3/16" stainless steel, deeply engraved labels adjacent to each sounding plug, remote valve operator, fuel fill and vents, fresh water fill and vent, lube oil fill, bilge discharge line, quick acting hatches, watertight doors and joiner doors. Labels shall identify service and/or space served and be continuously welded in place.

(o) All signs, notices, and labels required to be placed on vessel shall be fabricated vinyl using Avery Graphics, Series A3, 3 to 4 mil material, or equal, unless otherwise specified herein. All required painted signs, notices, and labels shall be painted by a competent Sign Painter approved by the Inspector.

(p) Contractor shall provide and install as directed by Inspector all notices required by U.S.C.G. Regulations such as station bills, stability letter, radio station license, etc. Notices shall be installed in glass faced frames that shall complement the vessel's interior finish.

5.4-5 STATE DECALS

(a) Contractor shall mount three (3) owner furnished decals, about 36" diameter, on 12 gauge galvanized sheet metal or 1/8" thick aluminum plates.

(b) Each Decal shall be installed on vessel with six (6) 1/4" stainless steel studs and nuts equally spaced, length as required. Mounting location on vessel shall be as directed by the Inspector and shall be installed to facilitate easy removal for future maintenance.

5.4-6 OIL WASTE DISCHARGE PLACARD

(a) Provide and install a placard suitably Photo-Etched or epoxy painted on anodized aluminum, 5" x 8". Placard shall be fixed adjacent to bilge pump control station in a conspicuous place. Placard shall be in accordance with 33 CFR 155.450.

5.4-7 GARBAGE DUMPING PLACARD

(a) Provide and install six (6) placards, located as directed by Inspector. Placards shall comply with the dimension, lettering and information requirements of 33 CFR 151.59

5.4-8 LABELING AND IDENTIFICATION OF HAND WHEELS AND PIPING

(a) All valve hand wheels and actuator handles shall be coated with glossy enamel using the following color codes.

SYSTEM	COLOR	FED.STD.NUMBER
FIREMAIN	RED	11105
FRESH WATER	BLUE (light)	15200
FUEL OIL	YELLOW	13538
COMPRESSED AIR	ORANGE	12246
BILGE SYSTEM	BLACK(dk.gray)	16081
HYDRAULIC	PURPLE	17141
SEA WATER	GREEN	14062
SEWAGE	GRAY (light)	16376

(b) All piping in the engine room shall be color coded, using the same scheme as above, by painting an arrow pointing in the direction of flow at sufficient intervals to allow ready identification. All fuel oil, hydraulic, and firemain piping shall be marked in the same manner throughout the vessel. Provide and mount in frame in engineers control booth, one (1) color code key plan.

SECTION VI

CONSTRUCTION SPECIFICATIONS

PROJECT WBS 34132.1.6

6.0 TEST & INSPECTIONS

6.1 TESTS

GENERAL

(a) All tests of structure, piping, machinery, and electrical systems shall be accomplished in accordance with all applicable classification societies and regulatory agency test requirements.

(b) This vessel shall be inspected in accordance with Title 46 Code of Federal Regulations, Subchapter "H", and all applicable classification society rules incorporated by reference therein. Any and all tests shall be witnessed and approved by the Inspector as he deems necessary.

6.2 WELDING

(a) All welding performed under this specification shall be performed using U.S. Coast Guard and/or American Bureau of Shipping approved welding process control procedures and shall be performed by welders holding a valid qualification certificate for each process control procedure performed issued by the U.S. Coast Guard or the American Bureau of Shipping. Qualified welding supervisors shall be employed and be present at the work site at all times when welding is being performed. Supervisors shall assure conformity with standards, procedures, and workmanship requirements.

(b) All welding shall be subject to inspection at any point in the process from fit-up to

final welding. Nondestructive inspection of all welds shall be preformed at any point in the welding process by the direction of the Inspector as he deems necessary.

(c) Final welds shall be subjected to radiographic inspection in accordance with American Bureau of Shipping, Rules for Non-destructive Inspection of Hull Welds, latest edition. Additional radiographs shall be taken for each failed radiograph, if any, in random locations designated by the Inspector on a one for one basis.

(d) All welds shall be subjected to visual inspection by the Inspector to assure that welds are free from surface discontinuities which might prove detrimental to the weld, such as undercut, porosity, cracks, melt through, burn through, etc.

6.3 STRUCTURE

(a) All voids and compartments below the main deck shall be proven watertight by testing at 1 1/2 p.s.i.g. While compartments and voids are under pressure all boundaries shall be soaped to identify any leaks. All leaks shall be repaired by completely removing non-tight welds by grinding or other suitable means and rewelded to the satisfaction of the Inspector. No repair welding shall be accomplished while the compartment being tested is pressurized. No leaks shall be closed by hammering or peening.

(b) All watertight boundaries above main deck shall be proven by hose testing by directing a stream of water of at least 50 p.s.i. against the weld or boundary being tested for a sufficient time to prove the boundary tight.

(c) Any additional test to prove the integrity of the vessels structure which may be required by the U.S. Coast Guard shall be performed as a part of this contract.

6.4 PIPING

(a) All tests of piping systems required by the U.S. Coast Guard shall be performed as a part of contract.

(b) All piping systems shall be tested using the medium normally carried in the system to a pressure of 1 1/2 times the systems' maximum allowable working pressure but in no case shall the pressure be less than 50 p.s.i.g except keel cooler and engine exhaust system piping. Fuel system piping may be tested using clean dry air as a test medium.

(c) All hydraulic system piping shall be pickled and flushed to a class five (5) standard N.A.S 1638.

(d) All fuel system piping shall be flushed using fuel until a sample appears clear and free from foreign particles when viewed in natural light.

(e) Initial installation test of all C02 system piping shall be free from any leaks and shall maintain required test pressures for three (3) minutes with no drop in pressure.

(f) Test pressures shall be held for a sufficient time to allow inspection of the entire piping system. After inspection of the system under pressure the test pressure shall be monitored by a calibrated gauge, with a mid point range within 10% of the test pressure, for a minimum of 15 minutes without any drop in pressure. The test gauge shall be at the opposite end of the piping system from the source of the test medium. During the 15 minute monitoring period the test medium source shall be removed from the piping system being tested.

6.5 ELECTRICAL

(a) All electrical systems shall be tested as prescribed in I.E.E.E. Standard #45 Section

46, A.B.S. Rules for Building and Classing Steel Vessels section 35.161.2 and 35.161.3; and 46 CFR 110.30.

6.6 MACHINERY

(a) All machinery shall be operated for a period sufficient to indicate satisfactory performance and operational acceptability, but not less than four (4) hours, after all adjustments have been made, without further adjustments.

6.7 MISCELLANEOUS

All other machinery and equipment shall be tested to prove its satisfactory operation and performance to the satisfaction of the Inspector and U.S. Coast Guard.

6.8 SEA TRIALS

Sea trials shall be run to check operation of steering gear and all equipment. Make any final adjustments, and retest as required, etc.

The Owner's representatives, the Inspector and the U. S. Coast Guard shall witness the trials.

6.9 PROPULSION ENGINES, PROPULSION AND GENERATOR UNITS

SEA TRIAL AUDIT

Each propulsion engine and generator shall receive a sea trial audit in accordance with the manufacturers recommendations. Main and auxiliary engines shall be prepared by installing diagnostic tool thermistors, pressure pick-ups & etc. as required to obtain the performance data. Caterpillar Marine Application Performance Analysis Review (latest form) shall be completed for each Main Engine and the original data submitted to the owner's representative at the completion of sea trials.

6.10 FINAL ACCEPTANCE TRIAL

After all work has been completed and the vessel made ready for delivery, the final acceptance trials shall be made. This trial shall consist of a run of at least six (6) hours during which the following tests **SHALL** be made:

a. Full speed run, up and down stream, in both directions of operation for record.

b. Cruising speed run, up and down stream in both directions of operation for record.

c. Full ahead to stop, in both directions, for record.

d. Full ahead to full astern, in both directions, for record.

e. Maneuverability, ahead and astern.

f. Sustained full speed run of two (2) hours duration for record.

g. Operate all machinery, equipment, lighting, signal devices, etc. for record.

The final acceptance trial shall be witnessed by the Owner, by the Inspectors, and by a number of invited guests, in addition to the Contractor's personnel.

6.11 GENERAL (TRIALS)

All trials shall be conducted by the Contractor at his expense. Any deficiency evident during any of the trials shall be corrected and that item shall be given another trial similar to the original.

6.12 STABILITY TEST

After all major items of work are completed a stability test as prescribed by the U.S. Coast Guard shall be conducted by the Contractor. The Contractor shall supply weights, crane or other means of shifting weights, labor as required, and cribbing for weights. Results of test to be

approved before vessel is placed in service. Preparations and procedures guidelines for Stability Test are outlined in NVIC 15-81 and ASTM F1321-90.

6.13 INSTRUCTION MANUALS

Three (3) sets each of the manufacturer's operating and maintenance manuals shall be furnished for all machinery and equipment furnished by the Contractor. The manuals shall contain operating and maintenance instructions and a list of parts.

6.14 PLANS

The Contractor shall deliver to the Inspector, after all work is finished on the vessel, all plans and sketches made by the Contractor and the contract plans showing the vessel "as built" condition in accordance with Section 1.11 herein.

6.15 LAUNCHING CEREMONIES

Provide all facilities, personnel, bunting, etc. in accordance with Contractor's standard launching policies and procedures to properly launch a vessel of this size and type. Owner reserves the privilege to invite no more than 150 guests.

6.16 ADMEASUREMENT

Contractor shall pay any and all fees involved for U.S. Coast Guard Admeasurement with necessary drawings and any related information. Admeasurement shall be both Regulatory and IMO.

6.17 SYSTEMS TEST AND REPORTS

(a) All systems or portion thereof required to be tested shall be recorded on Contractor provided Test Report Forms. All Test reports, including dock trials and sea trials, shall be bound

in booklet form with semi-flexible covers and appropriate title page. The original and two (2) copies shall be provided to the Inspector upon completion of all tests.

Test reports shall contain but not be limited to such data as:

(1) System Nomenclature

(2) Sub-system Nomenclature

(3) Type of Test (air, hydrostatic, etc.)

(4) Results

(5) Retest if required

All tests shall be witnessed by the Owners Inspector and U.S. Coast Guard Inspector (if required) and provision shall be made on test reports for signature of satisfactory completion by above Inspector's and Contractor's representative.

(b) Contractor shall provide the services of a factory authorized representative to approve the installation of and perform initial start up procedures and test of the following systems or components:

1. All alarm systems.
2. Navigation light control panels.
3. Radar and radio communication equipment.
4. Main and Emergency generator switch boards.
5. Voith Schneider Propulsion Units
6. Bosch/Rexroth Voith Propulsion Control System
7. Main engine controls

8. All Fixed, Semi-Portable and Hand Portable Fire Extinguishing Systems

9. Marine Sanitation Device

6.18 CERTIFICATES AND DOCUMENTS

The following certificates and documents shall be provided to the Owner prior to departure of vessel from contractor facility or upon acceptance of vessel as specified by owner:

Certificates/Documents	Quantity
1. Mill Test Report on Shafting	1-per shaft including spares
2. Mill Test Reports on Steel & pipe, as required	
3. U.S.C.G. Certificate of Inspection	Original (framed and mounted) plus two (2) copies
4. U.S.C.G. Stability Letter	Original (framed and mounted) plus two (2) copies
5. U.S.C.G. Life Raft Certificate	2-per life raft
6. U.S.C.G. Certificate for Fixed C02 System	two (2) copies
7. U.S.C.G. Certificate for Portable Fire Extinguishers	two (2) copies
8. U.S.C.G. Certificate of Admeasurement	as required plus two (2) copies
9. Master Builder's Certificate	as required plus two (2) copies
10. Compass Deviation Card	2-total Framed & Mounted in Pilot House

11. Stability Data - Booklet Form — Original and two copies

including the following minimum data

as required by applicable sections of 46 CFR 170:

(a) Inclining experiment data

(b) Trim and stability for minimum of eight loading conditions as selected by owner.

(c) Intact stability calculations

(d) Damage stability calculations

(e) Tank capacity tables

(f) Supplemental stability information

(1) Summary of maximum KG and minimum GMT required

(2) GMT required curve

(3) KG required curve

(4) Table of maximum VCG vs displacement CFR 170.173(c)).

(5) Righting arm tables for maximum VCG's

(6) Weather Criteria

(7) Passenger Criteria

(8) Hydrostatic Properties Table

(9) Hydrostatic Curves

(10) Sectional AREA Curves

12. Health Department Potable Water Lab Report — 2-copies

13. Receipted List of Ship's Keys — 2-copies

14. Instruction Books, Reproducible Vendors Drawings, and Equipment Specifications Manuals and Information for Equipment Installed as required by Specifications.

Note: Equipment manuals, Catalog Cut Sheets, and Component Information shall be bound in Boorum & Pease #C619 post binders or equal.

15. Placards, Notices, Etc. Frame and Mounted as required by Specifications.

16. Caterpillar Power Systems Sea Trial Reports as required.

17. Main Engine ABS Certifications.

6.19 VIBRATION ANALYSIS

Contractor shall provide the services of a reputable company experienced in conducting analysis of vibration induced by fluid-structure interaction, structure-machinery interaction and/or by the propeller. The completed vessel shall be examined to determine extent of vibration at all operating conditions and speeds. A detailed report of the "as found" condition shall be provided to the Inspector.

6.20 TORSIONAL ANALYSIS

Contractor shall provide the services of a reputable company experienced in conducting torsional analysis of marine engines, reduction gears and shaft lines. The complete main engine/reduction gear, propulsion shaft line, shaft couplings, engine to reduction gear couplings and bearings shall be evaluated to assure optimum performance at all operating conditions and speeds. A detailed report of the torsional analysis shall be provided to the Inspector.

SECTION VII

CONSTRUCTION SPECIFICATIONS

PROJECT WBS 34132.1.6

7.0 OPTIONAL ITEMS

7.1 OTHER WORK UNKNOWN AT TIME OF AWARD

The Owner may require additional work to be performed that is not covered by the specifications when award is made. At the Owner's option, this work shall be performed by the Contractor, either on a negotiated price or on a labor and material cost basis, plus 15% for material only. The labor rates submitted with the bid proposal are to be used in the event that the latter method is used. (See Section 1.12 Alterations)

The entire cost of the work covered by this part, complete and accepted, including all labor, tools, materials, and incidentals required, is separate and shall not be included in the bid for other work. It is distinctly understood and agreed that the Contractor shall have no claim whatsoever for anticipated profits or any other reason because of the deletion of any items in this part or for failure of the Owner to authorize additional work. All other provisions of the specifications shall apply to any of these items that may be authorized.

7.2 VIBRATION

If disturbing vibration of the vessel should occur when operating at full power in water of reasonable depth, appropriate measures are to be taken to eliminate such vibration.

Revised 2-8-05

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PARTIAL PAYMENTS

Partial payments will be made on a per vessel cost using contractor's Hull No. to identify partial payments as follows, when accompanied by Inspector approved invoice for stated events:

	EVENT	PERCENTAGE
1.	Execution of contract and proof of ordering all Main Engines, Generator Units, Voith Propulsion Units, and Mathews/Voith Control System	20 %
2.	Keel laying (continuous hull section about 21 Ft. minimum including two watertight bulkheads CVK, web frames and MN deck centerline girder)	20 %
3.	Complete installation of Main Engines, Generators, and Switchboards.	15 %
4.	Complete installation of Voith Propulsion Units	15 %
5.	Launch (shafting installed and initial alignment completed)	5 %
6.	Delivery/Acceptance by Owner at Hatteras Ferry Terminal, Hatteras, NC	25 %

Partial payments are subject to 10 percent (10%) withholding until final payment.

PROJECT WBS 34132.1.6

NEW CONSTRUCTION PASSENGER/VEHICLE FERRY

INSTRUCTIONS - Contractor shall complete each item below by inserting the appropriate value for each. Lump sum per vessel shall be equal to total of Individual Item Costs. Please use pen for completion. Complete lump sum price sheet.

ITEM	DESCRIPTION	COST
1.11	Detailed Working Drawings (to include welding schedule as set fourth in section 2.2)	$_____
2.3	Lofting	$_____
2.4	Hull Structure (2.4-1 - 2.4-21)	$_____
2.5	Superstructure (2.5-1 - 2.5-5)	$_____
2.6	Rails	$_____
2.7	Barriers and Rub Guards (2.7-1 - 2.7-2)	$_____
2.8	Mooring, Anchoring and Deck Fittings (2.8-1 - 2.8-4)	$_____
2.9	Doors (2.9-1 - 2.9-8)	$_____
2.10	Windows (2.10-1 - 2.10-3)	$_____
2.11	Portlights	$_____
2.12	Hatches, Manholes and Portable Plates (2.12-1 - 2.12-3)	$_____
2.13	Ladder, Stairways and Grabs	$_____
2.14	Life-Saving and Safety Equipment (2.14-1 - 2.14-7)	$_____

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2.15	Tanks (2.15-1 - 2.15-4)	$_____
2.16	Insulation	$_____
2.17	Structural Fire Insulation	$_____
2.18	Deck Covering	$_____
2.19	Joiner System	$_____
2.20	Furnishings (2.20-1 - 2.20-3)	$_____
2.21	Masts	$_____
2.23	Water Coolers	$_____
2.24	Engineer's Operation Station & Trunk	$_____
2.25	Navigation Aids and Signals (2.25-1 - 2.25-2)	$_____
2.26	Engine Room Workbench	$_____
2.27	Pilot House Consoles	$_____
2.28	Padeyes	$_____
2.29	Fixed Lead Ballast	$_____
2.30	Storage Lockers	$_____
2.31	Pilot House Shades	$_____
2.32	Passenger Deck Exterior Seats	$_____
2.33	Rescue Ladder	$_____
2.34	Gear Storage Lockers	$_____
2.35	Cathodic Protection System	$_____

PROJECT WBS 34132.1.6

3.4	Main Engines	$_____
3.5	Propulsion Units Installation & Control (including 3.5-1 - 3.5-3)	$_____
3.6	Shafting (including 3.6-1 - 3.6-5)	$_____
3.7	Exhaust Piping and Mufflers (including 3.7-1 – 3.7-4)	$_____
3.8	Exhaust System Insulation	$_____
3.9	Main Engine Control System	$_____
3.10	Ship's Service Air System	$_____
3.11	Keel Coolers, Main and Generators	$_____
3.12	Pumping and Piping Systems (3.12-1 - 3.12-10)	$_____
3.13	Vents, Overflows and Sounding Tube (3.13-1 - 3.13-2)	$_____
3.14	Seachest, Strainers and Discharges	$_____
3.15	Fixed CO2 Fire Extinguishing System (3.15-1 - 3.15-2)	$_____
3.16	Piping Insulation	$_____
3.17	Ventilation (3.17-1 - 3.17-7)	$_____
3.18	Heating and Air Conditioning	$_____
3.19	Guarding of Machinery	$_____
3.20	Drip Pans	$_____
3.21	Pilot House Window Washers	$_____

PROJECT WBS 34132.1.6

3.22	Main & S/S Generator Engine Oil Filters	$_____
3.23	Auxiliary Equipment	$_____
4.2	Generator Sets (4.2-1 - 4.2-2)	$_____
4.3	Batteries and Chargers	$_____
4.4	Main Switchboard & Distribution Panel	$_____
4.5	Emergency Switchboard Dist. Panel	$_____
4.6	Distribution Panels	$_____
4.7	Pilot House Searchlights	$_____
4.8	IBA Floodlight	$_____
4.9	Navigation Lights and Panel	$_____
4.10	Lighting and Receptacle System	$_____
4.11	Floodlights	$_____
4.12	Ramp Receptacles	$_____
4.13	Shore Power Cable & Receptacles	$_____
4.14	Hand Dryers	$_____
4.15	Toilet Heaters	$_____
4.16	Engine Room Heaters	$_____
4.17	Engineer's Alarm System	$_____
4.18	Pilot House Window Wiper	$_____
4.19	Sound Powered Telephone System	$_____
4.20	General Alarm System	$_____

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4.21	Public Address System	$_____
4.22	Automatic Fog Timer	$_____
4.23	State Radio	$_____
4.24	Fathometers	$_____
4.25	VHF Marine Radios	$_____
4.26	Radars	$_____
4.27	GPS System	$_____
4.28	Weather Monitoring System	$_____
4.29	Passenger Information System	$_____
4.30	Direct Current Distribution Panel	$_____
4.31	Spare Cable	$_____
5.0	Painting (5.1-1 – 5.1-10)	$_____
5.2	Shotblasting and Cleaning (5.2-1 – 5.2-3)	$_____
5.3-1	Hull Exterior Below Waterline	$_____
5.3-2	Hull Exterior Above Waterline	$_____
5.3-3	Superstructure Main Deck and Above Exteriors Including (5.3-4, 5.3-9, 5.3-11)	$_____
5.3-5	Superstructure Interiors	$_____
5.3-6	Engine Room, Engine Room Access, Interior and Exterior of Engineer's Operating Station	$_____

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5.3-7	Voids and Compartments Including 5.3-8	$ _____
5.3-10	Emergency Generator Room (Including Deck)	$ _____
5.3-12	Toilets	$ _____
5.3-13	Miscellaneous Coating and Trim	$ _____
5.4	Labeling and Marking (5.4-1 - 5.4-8)	$ _____
6.0	Tests and Inspections (Inclusive of 6.1 - 6.18)	$ _____
6.19	Vibration Analysis	$ _____
6.20	Torsional Analysis	$ _____
	Performance/Payment Bonds	$ _____
	Insurance (Section 1.13 d)	$ _____

PROJECT WBS 34132.1.6

1. **LUMP SUM BID**

Amount to complete plans, construction, testing and delivery of one (1) passenger/vehicle ferry in accordance with Plans and Specifications.

Lump Sum $_____

*** NOTE ***

All bidders shall specify, in the space provided below, the physical location of the construction facility, which will be used for the construction of this project.

This information shall be used by the Board of Transportation if award be made to the Lowest Responsible Bidder. Any substitution of construction site after award of contract shall be approved by the Department. The Contractor shall submit any request for substitution through the Inspector, and the request must provide a valid basis or reason for proposed substitution.

FACILITY LOCATION

_____

_____

_____

*** NOTE ***

Please see following page for option to bid on second vessel which is intended to be a sister ship of the vessel constructed under the terms and conditions of Project WBS 34132.6.

ADDITIONAL FERRY VESSEL:

In the space provided below, the bidder shall enter a lump sum price for which he agrees to execute a subsequent supplemental agreement to furnish an additional ferry vessel with identical specifications, quality, performance and all other attributes as required and performed under this contract. Notice of the Department's intent to enter into such agreement, if any, will be given the successful bidder within 120 days of award of this contract. The time frame for constructing the additional ferry vessel will be included in the notice of intent. Such time frame will not begin before August 1, 2005 or after September 1, 2005, and will include a minimum of Three Hundred Sixty-Five (365) consecutive calendar days for construction.

The lump sum bid price submitted for the second vessel's possible supplemental agreement will not be a consideration in determining the low bidder for this contract, however, the bidder must include a lump sum amount in the following space for his bid to be considered responsive.

Lump Sum Amount to construct and furnish additional ferry vessel
$\$$_____.

PROJECT WBS 34132.1.6

All bidders must complete the following information for the use of the Board of Transportation in considering unknown work, if any, contained in Part VII of the specifications for negotiation of increases or decreases.

LABOR AND MATERIALS	PER HOUR
a. Price of Chipper	$_____
b. Price of Shipfitter	$_____
c. Price of Machinist	$_____
d. Price of Carpenter	$_____
e. Price of Blacksmith	$_____
f. Price of Electrician	$_____
g. Price of Rigger	$_____
h. Price of Patternmaker	$_____
I. Price of Gas Cutter	$_____
j. Price of Coppersmith	$_____
k. Price of Pipefitter	$_____
l. Price of Boilermaker	$_____
m. Price of Welder	$_____
n. Price of Sheetmetal Worker	$_____
o. Price of Ship Joiner	$_____
p. Price of Painter	$_____
q. Price of Helper (All Trades)	$_____
r. Price of Labor	$_____

PROJECT WBS 34132.1.6

s. Price of Lagger $_____

t. Crane Service (To 5 Tons) $_____

u. Crane Service (5 to 25 Tons) $_____

v. Shotblasting (Equipment in Place) $_____ per sq.ft.

w. Shotwashing (Equipment in Place) $_____ per sq.ft.

x. Welding (per linear ft/pass) $_____

y. Galvanizing (Hot Dip Process) $_____

The price charged as itemized opposite each of the above listed artificers will, except as noted, include the cost of all materials and tools such as gas, electricity, heat, compressed air, torches, air hammers and their appurtenances, forges, welding equipment, welding iron; and all other materials normally employed by artificers in performing operations under their trades under modern conditions, but will exclude the cost of any other materials actually used by the artificers in these processes. When welding is performed, the required number of passes over one (1) foot of seam shall constitute one (1) linear welded foot.

Materials used in work, if purchased from the Contractor, shall be priced at his invoiced cost, plus 15%.

12/19/89

*AWARD LIMITS ON MULTIPLE PROJECTS

It is the desire of the Bidder to be awarded contracts, the value of

which will not exceed a total of $_____, for those projects indicated below on which bids are being opened on the same date as shown in the Proposal Form. Individual projects shall be indicated by placing the contract number and county in the appropriate place below. Projects not selected will not be subject to an award limit.

_____ (Contract Number)	_____ (County)
_____ (Contract Number)	_____ (County)
_____ (Contract Number)	_____ (County)
_____ (Contract Number)	_____ (County)
_____ (Contract Number)	_____ (County)
_____ (Contract Number)	_____ (County)

*If a Bidder desires to limit the total amount of work awarded to him in this letting, he shall state such limit in the space provided above in the second line of this form.

It is agreed that in the event that I am (we are) the low Bidder(s) on indicated projects, the total value of which is more that the above stipulated award limits, the Board of Transportation will award me (us) projects from among those indicated which have a total value not exceeding the award limit and which will result in the lowest total bids to the Department of Transportation.

_____
**Signature of Authorized Person

**Only those persons authorized to sign bids under the provisions of Article 102-8, Item 7, shall be authorized to sign this form.

C201330
HYDE COUNTY

LISTING OF MB & WB SUBCONTRACTORS

Sheet _____ of _____

FIRM NAME AND ADDRESS	MB OR WB	ITEM NO.	ITEM DESCRIPTION	(*) AGREED UPON UNIT PRICE	DOLLAR VOLUME OF ITEM

CONTRACT NO. _____ **COUNTY** _____ **FIRM** _____

C201330
HYDE COUNTY

LISTING OF MB & WB SUBCONTRACTORS

Sheet _____ of _____

FIRM NAME AND ADDRESS	MB OR WB	ITEM NO.	ITEM DESCRIPTION	(*) AGREED UPON UNIT PRICE	DOLLAR VOLUME OF ITEM

CONTRACT NO. _____ **COUNTY** _____ **FIRM** _____

C201330
HYDE COUNTY

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Sheet _____ of _____

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C201330
HYDE COUNTY

LISTING OF MB & WB SUBCONTRACTORS

Sheet _____ of _____

FIRM NAME AND ADDRESS	MB OR WB	ITEM NO.	ITEM DESCRIPTION	(*) AGREED UPON UNIT PRICE	DOLLAR VOLUME OF ITEM

(*) The Dollar Volume Shown in this Column Shall be Actual Price Agreed Upon by the Prime Contractor and the MB and/or WB Subcontractor, and These Prices will be Used to Determine the Percentage of the MB and/or WB Participation in the Contract.

Dollar Volume of MB Subcontractor.....$ _____
MB Percentage of Total Contract Bid Price..... _____%
Dollar Volume of WB Subcontractor .....$_____
WB Percentage of Total Contract Bid Price..... _____%

C201330
HYDE COUNTY

12/21/99

EXECUTION OF BID, NONCOLLUSION AFFIDAVIT, AND DEBARMENT CERTIFICATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of "Status" under penalty of perjury under the laws of the United States in accordance with the Debarment Certification included elsewhere in the proposal form, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

SIGNATURE OF CONTRACTOR
(If a corporation uses this sheet)

_____
(Print full name of corporation)

_____
(Address as Prequalified)

Attest_____ By_____
(Secretary) (Assistant Secretary) (President) (Vice President)
Delete inappropriate title (Asst. Vice President)
Delete inappropriate title

_____ _____
Print Signer's Name Print Signer's Name

CORPORATE SEAL

NOTE - AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

_____ day of _____, 20___.

_____
(Signature of Notary Public) NOTARY SEAL:

of _____County.

State of _____.

My Commission Expires: _____

Signature Sheet 1 (Bid) - Corporation

EXECUTION OF BID, NONCOLLUSION AFFIDAVIT, AND DEBARMENT CERTIFICATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of "Status" under penalty of perjury under the laws of the United States in accordance with the Debarment Certification included elsewhere in the proposal form, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

SIGNATURE OF CONTRACTOR
(If a joint venture, use this sheet)

Instructions to Bidders: On Line (1), print the name of each contractor. On Line (2), print the name of one of the joint venturers and execute below in the appropriate manner and furnish in the following lines all information required by Article 102-8 of the Specifications. On Line (3), print the name of the other joint venturer and execute below in the appropriate manner and furnish all information required by said article of the Specifications. For correct form of execution and information required for execution of this sheet by an individual, see Signature Sheets 3 and 4; for a corporation, see Signature Sheet 1; and for a partnership, see Signature Sheet 5.

(1)_____ and _____
A Joint Venture

(2)_____(Seal)
(Name of Contractor)

_____
(Address as Prequalified)

_____ By_____
Witness or Attest

_____ _____
Print Signer's Name Print Signer's Name
If a corporation, affix corporate seal:

and

(3)_____(Seal)
(Name of Contractor)

_____
(Address as Prequalified)

_____ By_____
Witness or Attest

_____ _____
Print Signer's Name Print Signer's Name
If a corporation, affix corporate seal:

NOTE - AFFIDAVIT MUST BE NOTARIZED For Line (2)

Subscribed and sworn to before me

this the _____day of _____, 20____.

_____
(Signature of Notary Public & Seal)

of _____County.

State of _____.

My Commission Expires:_____.

NOTE - AFFIDAVIT MUST BE NOTARIZED For Line (3)

Subscribed and sworn to before me

this the ____ day of _____, 20___.

_____
(Signature of Notary Public & Seal)

of _____County.

State of _____.

My Commission Expires_____.

C201330
HYDE COUNTY

12/21/99

EXECUTION OF BID, NONCOLLUSION AFFIDAVIT, AND DEBARMENT CERTIFICATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of "Status" under penalty of perjury under the laws of the United States in accordance with the Debarment Certification included elsewhere in the proposal form, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

SIGNATURE OF CONTRACTOR
(If an individual doing business under a firm name, use this sheet)

Name of Contractor_____trading
(Print individual name)

_____
Witness

and doing business as _____
(Print firm name)

_____
Print Signer's Name

_____
(Address as Prequalified)

Signature of Contractor_____
(Individually)

_____
Print Signer's Name

NOTE - AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

NOTARY SEAL

_____ day of _____, 20___.

_____
(Signature of Notary Public)

of _____County.

State of _____.

My Commission Expires:_____

Signature Sheet 3 (Bid) - INDIVIDUAL WITH FIRM NAME

12/21/99

EXECUTION OF BID, NONCOLLUSION AFFIDAVIT, AND DEBARMENT CERTIFICATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of "Status" under penalty of perjury under the laws of the United States in accordance with the Debarment Certification included elsewhere in the proposal form, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

SIGNATURE OF CONTRACTOR
(If an individual doing business in his own name, use this sheet)

Name of Contractor_____
(Print)

_____
(Address as Prequalified)

_____ Signature of Contractor_____
Witness (Individually)

_____ _____
Print Signer's Name Print Signer's Name

NOTE - AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the NOTARY SEAL

_____ day of _____, 20___.

_____
(Signature of Notary Public)

of _____County.

State of _____.

My Commission Expires:_____

12/21/99

EXECUTION OF BID, NONCOLLUSION AFFIDAVIT, AND DEBARMENT CERTIFICATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid, and that the bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the bidder's certification of "Status" under penalty of perjury under the laws of the United States in accordance with the Debarment Certification included elsewhere in the proposal form, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

SIGNATURE OF CONTRACTOR
(If a partnership, use this sheet)

_____
(Print Name of Partnership)

_____
(Address as Prequalified)

_____ By_____
Witness Partner

_____ _____
Print Signer's Name Print Signer's Name

NOTE - AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the NOTARY SEAL

_____ day of _____, 20___.

_____
(Signature of Notary Public)

of _____County.

State of _____.

My Commission Expires:_____

12/21/99

EXECUTION OF BID, NONCOLLUSION AFFIDAVIT, AND DEBARMENT CERTIFICATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this bid, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of "Status" under penalty of perjury under the laws of the United States in accordance with the Debarment Certification included elsewhere in the proposal form, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

SIGNATURE OF CONTRACTOR
(Limited Liability Company, use this sheet)

Name of Contractor_____
(Print firm name)

_____
(Address as Prequalified)

Signature of Manager_____
(Individually)

_____
Print Signer's Name

NOTE - AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

_____ day of _____, 20___.

NOTARY SEAL

_____
(Signature of Notary Public)

of _____County.

State of _____.

My Commission Expires:_____

2/16/99

Contract No: C201330

County: Hyde

ACCEPTED BY THE
DEPARTMENT OF TRANSPORTATION

_____
Contract Officer

_____
Date

Execution of Contract and Bonds
Approved as to Form:

_____
Attorney General

7/17/90

DEBARMENT CERTIFICATION OF BIDDERS

Instructions & conditions for certification

1. By signing and submitting this proposal, the bidder is providing the certification set out below.

2. The inability of a bidder of provide the certification required below will not necessarily result in denial of participation in this contract. If the certification is not provided, the bidder must submit an explanation (exception) of why it cannot provide the certification set out below. The certification or explanation (exception) will be considered in connection with the Department's determination whether to award the contract. However, failure of the prospective bidder to furnish a certification or an explanation (exception) may be grounds for rejection of the bid.

3. The certification in this provision is a material representation of fact upon which reliance is placed when the Department determines whether or not to award the contract. If it is later determined that the bidder knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the Department may terminate this contract for cause of default.

4. The prospective bidder shall provide immediate written notice to the Department if at any time the bidder learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

5. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this provision, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. A copy of the Federal Rules requiring this certification and detailing the definitions and coverages may be obtained from the Contract Officer of the Department.

6. The bidder agrees by submitting this bid that, should the contract be awarded, 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 contract, unless authorized by the Department.

7. The prospective bidder further agrees by submitting this proposal that it will include the Federal-Aid Provision titled "Required Contract Provisions Federal-Aid Construction Contract" (Form FHWA PR 1273) provided by the Department, without subsequent modification, in all lower tier covered transactions.

8. The prospective bidder 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.

9. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this provision. 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.

10. Except for transactions authorized under paragraph 6 of these instructions, if the successful bidder 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 other remedies available to the Federal Government, the Department may terminate this transaction for cause of default.

DEBARMENT CERTIFICATION

The bidder certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph b. of this certification; and

d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

Where the prospective bidder is unable to certify to any of the statements in this certification, it shall attach an explanation to this proposal.

****

IF AN EXPLANATION, AS PROVIDED IN THE ABOVE DEBARMENT CERTIFICATION, HAS BEEN ATTACHED TO THE PROPOSAL, PLEASE CHECK THE BOX SHOWN BELOW:

☐ An explanation has been attached to the proposal.