

Updated 6/27/2024

FEDERAL PROJECT

BIDDING INSTRUCTIONS

FOR ALL PROJECTS:

1. Use pen and ink to complete all paper Bids.
2. As a minimum, the following must be received prior to the time of Bid opening:

For a Paper Bid:

- a) a copy of the Notice to Contractors, b) the completed Acknowledgement of Bid Amendments form, c) the completed Schedule of Items, d) two copies of the completed and signed Contract Offer, Agreement & Award form, e) a Bid Guaranty, (if required), and f) any other certifications or Bid requirements listed in the Bid Documents as due by Bid opening.

For an Electronic Bid:

NOTE: Not all projects accept Electronic Bids. Please review the Notice to Contractors and see if it specifically states that Electronic Bids will be accepted.

- a) a completed Bid using Expedite® software and submitted via the Bid Express™ web-based service, b) an electronic Bid Guaranty (if required) or a faxed copy of a Bid Bond (with original to be delivered within 72 hours), and c) any other Certifications or Bid requirements listed in the Bid Documents as due by Bid opening.
3. Include prices for all items in the Schedule of Items (excluding non-selected alternates).
 4. Bid Guaranty acceptable forms are:
 - a) a properly completed and signed Bid Bond on the Department's prescribed form (or on a form that does not contain any significant variations from the Department's form as determined by the Department) for 5% of the Bid Amount or
 - b) an Official Bank Check, Cashier's Check, Certified Check, U.S. Postal Money Order or Negotiable Certificate of Deposit in the amount stated in the Notice to Contractors or
 - c) an electronic bid bond submitted with an electronic bid.
 5. If a paper Bid is to be sent, "FedEx First Overnight" delivery is suggested as the package is delivered directly to the DOT Headquarters Building located at 16 Child Street in Augusta. Other means, such as U.S. Postal Service's Express Mail has proven not to be reliable.

IN ADDITION, FOR FEDERAL AID PROJECTS:

6. Complete the DBE Proposed Utilization form, and submit with your bid. If you are submitting your bid electronically, you must FAX the form to (207) 624-3431. This is a curable defect.

If you need further information regarding Bid preparation, call the DOT Contracts Section at (207) 624-3410.

For complete bidding requirements, refer to Section 102 of the Maine Department of Transportation, Standard Specifications, March 2020 Edition.

NOTICE

The Maine Department of Transportation is attempting to improve the way Bid Amendments/Addendums are handled, and allow for an electronic downloading of bid packages from our website, while continuing to maintain an optional plan holders list.

Prospective bidders, subcontractors or suppliers who wish to download a copy of the bid package and receive a courtesy notification of project specific bid amendments must fill out the on-line plan holder registration form and provide an email address to the MDOT Contracts mailbox at: MDOT.contracts@maine.gov. Each bid package will require a separate request.

Additionally, interested parties will be responsible for reviewing and retrieving the Bid Amendments from our web site, and acknowledging receipt and incorporating those Bid Amendments in their bids using the Acknowledgement of Bid Amendment Form.

Downloading bid packages from the MaineDOT website is not the same as providing an electronic bid to the Department. Electronic bids must be submitted via <http://www.BIDX.com>.

For information on electronic bidding, contact Rebecca Snowden at rebecca.snowden@maine.gov or Guy Berthiaume at Guy.Berthiaume@maine.gov

NOTICE

For security and other reasons, all Bid Packages which are mailed, shall be provided in double (one envelope inside the other) envelopes. The *Inner Envelope* shall have the following information provided on it:

Bid Enclosed - Do Not Open

PIN:

Town:

Date of Bid Opening:

Name of Contractor with mailing address and telephone number:

In Addition to the usual address information, the *Outer Envelope* should have written or typed on it:

Double Envelope: Bid Enclosed

PIN:

Town:

Date of Bid Opening:

Name of Contractor:

This should not be much of a change for those of you who use Federal Express or similar services.

Hand-carried Bids may be in one envelope as before, and should be marked with the following information:

Bid Enclosed: Do Not Open

PIN:

Town:

Name of Contractor:

October 16, 2001

STATE OF MAINE DEPARTMENT OF TRANSPORTATION
Bid Guaranty-Bid Bond Form

KNOW ALL MEN BY THESE PRESENTS THAT _____

_____, of the City/Town of _____ and State of _____

as Principal, and _____ as Surety, a

Corporation duly organized under the laws of the State of _____ and having a usual place of

Business in _____ and hereby held and firmly bound unto the Treasurer of

the State of Maine in the sum of _____ for payment which Principal and Surety bind

themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

The condition of this obligation is that the Principal has submitted to the Maine Department of

Transportation, hereafter Department, a certain bid, attached hereto and incorporated as a

part herein, to enter into a written contract for the construction of _____

_____ and if the Department shall accept said bid

and the Principal shall execute and deliver a contract in the form attached hereto (properly

completed in accordance with said bid) and shall furnish bonds for this faithful performance of

said contract, and for the payment of all persons performing labor or furnishing material in

connection therewith, and shall in all other respects perform the agreement created by the

acceptance of said bid, then this obligation shall be null and void; otherwise it shall remain in full

force, and effect.

Signed and sealed this _____ day of _____ 20____

WITNESS:

WITNESS

PRINCIPAL:

By _____

By: _____

By: _____

SURETY:

By _____

By: _____

Name of Local Agency: _____

NOTICE

Bidders:

Please use the attached “Request for Information” form when submitting questions concerning specific Contracts that have been advertised for Bid, include additional numbered pages as required. RFI’s may be faxed to 207-624-3431, submitted electronically through the Departments web page of advertised projects by selecting the RFI tab on the project details page or via e-mail to RFI-Contracts.MDOT@maine.gov.

These are the only allowable mechanisms for answering Project specific questions. Maine DOT will not be bound to any answers to Project specific questions received during the Bidding phase through other processes.

When submitting RFIs by Email please follow the same guidelines as stated on the “Request for Information” form and include the word “RFI” along with the Project name and Identification number in the subject line.

RFI No:

Date _____

WIN(S): _____ **Town(s):** _____ **Bid Date:** _____

Question(s):

Company Name: _____ **Phone: ()** _____

Email: _____ **Fax:** (____) _____

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NOTICE

Disadvantaged Business Enterprise Commitment Confirmation

All Bidders must submit the Commitment Confirmation form with their bid.

The Commitment Confirmation form contains information required by USDOT.

The Commitment Confirmation form must be completed by each Prime Contractor.

A copy of the new Commitment Confirmation form and instructions for completing it are attached.

The DBE Directory can be found on the MaineDOT Website at: <https://www.maine.gov/mdot/civilrights/dbe/>

Questions about the Directory or this form should be sent to the Civil Rights Office at mary.bryant@maine.gov or by calling 207-624-3056.

INSTRUCTIONS FOR PREPARING THE MAINE DOT COMMITMENT CONFIRMATION FORM

The Contractor shall extend equal opportunity to MaineDOT certified DBE firms (as listed in MaineDOT's DBE Directory of Certified Businesses) in the selection and utilization of subcontractors and suppliers.

Each prime contractor submitting a bid on a federally funded project must complete each section of the Commitment Confirmation form in its entirety for itself and each subcontractor on that project.

SPECIFIC INSTRUCTIONS FOR COMPLETING THE FORM:

Section A:

1. Insert Contractor Name
2. Insert WIN for the Federal Project bidding on
3. Insert Bid Date
4. Insert Project Location
5. Insert Email address of Contact Person

Section B:

- A. Enter each Contractor's and Sub-Contractor's name and address (including zip code) – Prime Contractor's name should be listed in first box of this section; then each additional line would be proposed subcontractors – DBE or NonDBE
- B. Enter each Contractor's and Sub-Contractor's annual gross receipts bracket (see the legend on the form)
- C. Enter DBE status (DBE or non-DBE) for each contractor/sub-contractor
- D. Enter each Contractor's and Sub-Contractor's NAICS (North Amer. Industry Classification System) code (may be more than one) and Scope of Work
- E. For each Contractor and Sub-Contractor enter the Race and Gender of the firm's majority owner
- F. Enter the Age of each Contractor/Sub-Contractor
- G. Enter the Proposed amount of payment (Bid amount) for each Contractor/Sub-Contractor.

Maine Department of Transportation
COMMITMENT CONFIRMATION

Section A. Bidder/Prime Contractor Information.

This section must be completed by the Bidder/Prime Contractor.

1. Prime Contractor Name:		2. Federal Project WIN:		3. Bid Date:	
4. Project Location:		5. Email Address:			

Section B. Commitment Details - Prime Contractor and all Proposed Subcontractor Information is Required in This Section

A. Firm's Name & Address, Including Zip Code Prime must be listed first	B. Annual Gross Receipt Bracket Select 1 to 7*	C. Status DBE or Non-DBE	D. NAICS Code(s) and Scope of Work	E. Race & Gender of each Firm's Majority Owner	F. Age of Each Firm	G. Proposed Amount

*1) Less Than \$1M, 2) \$1 - \$3M, 3) \$3 - \$6M, 4) \$6 - \$10M, 5) \$10 - \$20M, 6) \$20 - \$50M, 7) Greater Than \$50M - More than 5 Subs use a new form

MaineDOT Use Only:

Form Received: / / Verified by: FHW A FTA FAA

For a complete list of certified DBE firms please visit: <http://www.maine.gov/mdot/civilrights/>

Note: This information is required pursuant to 49 CFR §26.11 and is used to track data in all federally funded MaineDOT contracts.

DBE GOAL NOTICE FFY 2023-2025
Maine Department of Transportation
Disadvantaged Business Enterprise Program

Notice is hereby given that in accordance with US DOT regulation 49 CFR Part 26, the Maine Department of Transportation (MaineDOT) has established a Disadvantaged Business Enterprise Program (DBE) for disadvantaged business participation in the federal-aid transit program, funded by the Federal Transit Administration (FTA). MaineDOT contracts covered by the program include consulting, construction, supplies, manufacturing, and transit-related services.

For the Federal Fiscal Years 2023-2025 (Oct. 1, 2022 through Sept. 30, 2025), MaineDOT has established an annual DBE participation goal of **1.02%** to be achieved through race/gender neutral means. The FTA has approved this goal through Sept. 30, 2025. MaineDOT must meet this goal each federal fiscal year. If the goal is not met, MaineDOT must provide a justification explaining why it was not met and develop a plan to ensure the goal is met, which may include contract goals on specific projects that contractors will be required to meet.

MaineDOT asks all contractors, consultants and subcontractors to seek certified DBE firms for projects and to work to meet the determined 1.02% goal without the need to impose contract goals. DBE firms are listed on the MaineDOT website at: <http://www.maine.gov/mdot/civilrights/dbe/>

Interested parties may view MaineDOT's DBE goal setting methodology, also posted on this website. If you have questions regarding this goal or the DBE program you may contact Sherry Tompkins at the Maine Department of Transportation's Civil Rights Office by telephone at (207) 624-3056 or by e-mail at: sherry.tompkins@maine.gov

Maine Department of Transportation Civil Rights Office

Directory of Certified Disadvantaged Business Enterprises

Listing can be found at:

<https://www.maine.gov/mdot/civilrights/dbe/>

For additional information and guidance contact:

Civil Rights Office at (207) 624-3066

It is the responsibility of the Contractor to access the DBE Directory at this site in order to have the most current listing.

Vendor Registration

Prospective Bidders must register as a vendor with the Department of Administrative & Financial Services if the vendor is awarded a contract. Vendors will not be able to receive payment without first being registered. Vendors/Contractors will find information and register through the following link –

<http://www.maine.gov/purchases/venbid/index.shtml>

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

Sealed Bids from contractors addressed to the Maine Department of Transportation, Augusta, Maine 04333 and endorsed on the wrapper “Bids for Construction of a hybrid ferry to replace the Margaret Chase Smith between Lincolnville and Islesboro” will be received at the MaineDOT Building, Capitol Street, Augusta, Maine, until 11:00 A.M. (prevailing time) on **December 18, 2024** and at that time and place publicly opened and read. Bidders will be required to demonstrate their ability to perform the work in accordance with the INSTRUCTIONS TO BIDDERS, Bidder’s Technical Capability.

Description: Federal Project No. 2460510 / WIN. 024605.10

Location: In Waldo County, project shall be delivered to the Maine State Ferry Service in Lincolnville Maine.

Outline of Work: Construction of 207-foot LOA double-ended passenger/vehicle ferry.

A Mandatory Pre-Bid Conference will be held from 10 a.m. to Noon on November 15, 2024. Please email mackenzie.a.kersbergen@maine.gov to register for this virtual meeting.

Project-specific questions using the electronic RFI form should be faxed to (207) 624-3431, attn.: **Project Manager Mackenzie Kersbergen**. Questions may be emailed to RFI-Contracts.MDOT@maine.gov – with project name and identification number in the subject line. Questions received after 12:00 Noon of the Monday before bid date (or if the Monday is a holiday, the Friday before) will not be answered. For general information, call George Macdougall at (207) 624-3410. Bidders shall not contact any other MaineDOT staff for clarification of Contract provisions, and MaineDOT will not be responsible for interpretations so obtained. TTY users call Maine Relay 711.

Digital bid documents are available online free of charge: www.maine.gov/mdot/contractors/. Paper bid documents may be purchased from 7:00-3:30 M-F by cash, Visa/Mastercard or check payable to “Treasurer, State of Maine” sent to Maine Department of Transportation, Attention: Mailroom, 24 Child St., Augusta, ME 04333-0016. They may be purchased by phone at (207) 624-3536 from 7:00-3:30, as follows: full-size plans are **\$108** (\$115 by mail); half-size plans are **\$56.00** (\$59.75 by mail); bid book is \$10 (\$13 by mail); single sheets are \$2 – payable in advance, all non-refundable.

Each Bid must be made upon MaineDOT blank bid forms and accompanied by a bid bond for 5% of the bid amount or official bank check, cashier’s check, certified check, certificate of deposit, or U.S. postal money order for 5% of the bid amount, payable to “Treasurer, State of Maine” as a Bid guarantee. A Contract Performance Surety Bond and a Contract Payment Surety Bond, each for 100% of the Contract price, will be required of the successful Bidder.

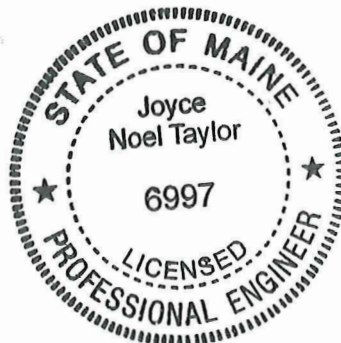
This Contract is subject to all applicable Federal laws and to compliance with the Disadvantaged Business Enterprise Program requirements as set forth by MaineDOT.

All work shall be governed by *State of Maine Department of Transportation, Standard Specifications, March 2020*, price \$10 [\$15 by mail] and *Standard Details, March 2020 Edition*, price \$10 [\$15 by mail]. They may be purchased by phone at (207) 624-3536 from 7:00-3:30 M-F. Updates: www.maine.gov/mdot/contractors/publications/.

MaineDOT hereby reserves the right to reject any or all bids.

Augusta, Maine
October 16, 2024

JOYCE NOEL TAYLOR, P.E.
CHIEF ENGINEER



SPECIAL PROVISION 102.7.3
ACKNOWLEDGMENT OF BID AMENDMENTS

With this form, the Bidder acknowledges its responsibility to check for all Amendments to the Bid Package. For each project under advertisement, Amendments are posted at www.maine.gov/mdot/contractors/. It is the Bidder's responsibility to determine if there are Amendments, to download them, to incorporate them into the Bid Package, and to reference the Amendment number and the date in the table below. MaineDOT will not post Bid Amendments later than Noon the day before Bid Opening without individually notifying all the planholders.

Amendment Number	Date

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

CONTRACTOR

Date

Signature of authorized representative

(Name and Title Printed)

Maine Department of Transportation

Proposal Schedule of Items

Page 1 of 1

Proposal ID: 024605.10

Project(s): 024605.10

SECTION: 1	MAIN ITEMS
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Alt Set ID: Alt Mbr ID:

Contractor: _____

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price		Bid Amount	
			Dollars	Cents	Dollars	Cents
0010	853.20 FERRY VESSEL CONSTRUCTION	LUMP SUM	LUMP	SUM		
Section: 1			Total:			
			Total Bid:			

CONTRACT AGREEMENT, OFFER & AWARD

This AGREEMENT is made on the date last signed below, by and between the State of Maine, acting through its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address of 16 State House Station, Augusta, Maine 04333-0016, and _____,

_____ ,
a corporation or other legal entity organized under the laws of the State of _____ ,
with its principal place of business located at _____

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the Contract), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **WIN 024605.10** for **construction of a new hybrid ferry to replace the Marget Chase Smith serving** the towns of **Lincolntonville** and **Islesboro**, County of **Waldo**, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor shall have **nine hundred (900) Calendar Days** from issuance of the Notice to Proceed to complete all Work, except warranty work, and deliver the vessel to the Maine State Ferry Service Rockland Terminal. Furthermore, the Department may deduct from money otherwise due the Contractor, not as a penalty, but as Liquidated Damages, in accordance with Sections 107.7 and 107.8 of the *State of Maine Department of Transportation Standard Specifications, March 2020 Edition* and related Special Provisions.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is

\$ _____ Performance Bond and Payment Bond each being 100% of
the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, *Standard Specifications, March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, Technical Specifications, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in the Federal Contract Provisions Supplement, and the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, *Standard Specifications March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

WIN 024605.10 - Construction of a new hybrid ferry, to replace the Margaret Chase Smith ferry serving Lincolnville and Islesboro

State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached "Schedule of Items."

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Schedule of Items" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached “Schedule of Items,” which may be ordered by the Resident, and to accept as full compensation the amount determined upon a “Force Account” basis as provided in the *Standard Specifications, March 2020 Edition*, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier’s check, certificate of deposit or U. S. Postal Money Order in the amount given in the “Notice to Contractors”, payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work as stated in Section 107.2 of the *Standard Specifications March 2020 Edition* and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) requirements contained in the attached Special Provision Section 105 (Disadvantaged Business Enterprise Program and submit a completed DBE Commitment Confirmation with their bid.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby executes two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

Date

(Signature of Legally Authorized Representative
of the Contractor)

Witness

(Name and Title Printed)

G. Award.

Your offer is hereby accepted. This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: Bruce A. Van Note, Commissioner

Witness

CONTRACT AGREEMENT, OFFER & AWARD

This AGREEMENT is made on the date last signed below, by and between the State of Maine, acting through its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street, Augusta, Maine, with a mailing address of 16 State House Station, Augusta, Maine 04333-0016, and _____,

_____ ,
a corporation or other legal entity organized under the laws of the State of _____ ,
with its principal place of business located at _____

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the Contract), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all work as specified or indicated in the Contract including Extra Work in conformity with the Contract, **WIN 024605.10** for **construction of a new hybrid ferry to replace the Marget Chase Smith serving** the towns of **Lincolntonville** and **Islesboro**, County of **Waldo**, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor shall have **nine hundred (900) Calendar Days** from issuance of the Notice to Proceed to complete all Work, except warranty work, and deliver the vessel to the Maine State Ferry Service Rockland Terminal. Furthermore, the Department may deduct from money otherwise due the Contractor, not as a penalty, but as Liquidated Damages, in accordance with Sections 107.7 and 107.8 of the *State of Maine Department of Transportation Standard Specifications, March 2020 Edition* and related Special Provisions.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is

\$ _____ Performance Bond and Payment Bond each being 100% of
the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, *Standard Specifications, March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, Technical Specifications, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in the Federal Contract Provisions Supplement, and the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, *Standard Specifications March 2020 Edition, Standard Details March 2020 Edition* as updated through advertisement, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

WIN 024605.10 - Construction of a new hybrid ferry, to replace the Margaret Chase Smith ferry serving Lincolnville and Islesboro

State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached "Schedule of Items."

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Schedule of Items" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached “Schedule of Items,” which may be ordered by the Resident, and to accept as full compensation the amount determined upon a “Force Account” basis as provided in the *Standard Specifications, March 2020 Edition*, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier’s check, certificate of deposit or U. S. Postal Money Order in the amount given in the “Notice to Contractors”, payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work as stated in Section 107.2 of the *Standard Specifications March 2020 Edition* and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) requirements contained in the attached Special Provision Section 105 (Disadvantaged Business Enterprise Program and submit a completed DBE Commitment Confirmation with their bid.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby executes two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

CONTRACTOR

Date

(Signature of Legally Authorized Representative
of the Contractor)

Witness

(Name and Title Printed)

G. Award.

Your offer is hereby accepted. This award consummates the Contract, and the documents referenced herein.

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: Bruce A. Van Note, Commissioner

Witness

CONTRACT AGREEMENT, OFFER & AWARD

AGREEMENT made on the date last signed below, by and between the State of Maine, acting through and by its Department of Transportation (Department), an agency of state government with its principal administrative offices located at Child Street Augusta, Maine, with a mailing address at 16 State House Station, Augusta, Maine 04333-0016, and

(Name of the firm bidding the job)

a corporation or other legal entity organized under the laws of the State of Maine, with its principal place of business located at **(address of the firm bidding the job)**

The Department and the Contractor, in consideration of the mutual promises set forth in this Agreement (the "Contract"), hereby agree as follows:

A. The Work.

The Contractor agrees to complete all Work as specified or indicated in the Contract including Extra Work in conformity with the Contract, PIN No.01 **12345.00**, for the **Hot Mix Asphalt Overlay** in the town/city of **South Nowhere**, County of **Washington**, Maine. The Work includes construction, maintenance during construction, warranty as provided in the Contract, and other incidental work.

The Contractor shall be responsible for furnishing all supervision, labor, equipment, tools supplies, permanent materials and temporary materials required to perform the Work including construction quality control including inspection, testing and documentation, all required documentation at the conclusion of the project, warranting its work and performing all other work indicated in the Contract.

The Department shall have the right to alter the nature and extent of the Work as provided in the Contract; payment to be made as provided in the same.

B. Time.

The Contractor agrees to complete all Work, except warranty work, on or before **November 15, 2006**. Further, the Department may deduct from moneys otherwise due the Contractor, not as a penalty, but as Liquidated Damages in accordance with Sections 107.7 and 107.8 of the *State of Maine Department of Transportation Standard Specifications, March 2020 Edition* and related Special Provisions.

C. Price.

The quantities given in the Schedule of Items of the Bid Package will be used as the basis for determining the original Contract amount and for determining the amounts of the required Performance Surety Bond and Payment Surety Bond, and that the amount of this offer is (Place bid here in alphabetical form such as One Hundred and Two dollars and 10 cents)
\$ (repeat bid here in numerical terms, such as \$102.10) Performance Bond and Payment Bond each being 100% of the amount of this Contract.

D. Contract.

This Contract, which may be amended, modified, or supplemented in writing only, consists of the Contract documents as defined in the Plans, *Standard Specifications, March 2020 Edition, Standard Details March 2020 Edition*, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds. It is agreed and understood that this Contract will be governed by the documents listed above.

E. Certifications.

By signing below, the Contractor hereby certifies that to the best of the Contractor's knowledge and belief:

1. All of the statements, representations, covenants, and/or certifications required or set forth in the Bid and the Bid Documents, including those in Appendix A to Division 100 of the *Standard Specifications March 2020 Edition* (Federal Contract Provisions Supplement), and the Contract are still complete and accurate as of the date of this Agreement.
2. The Contractor knows of no legal, contractual, or financial impediment to entering into this Contract.
3. The person signing below is legally authorized by the Contractor to sign this Contract on behalf of the Contractor and to legally bind the Contractor to the terms of the Contract.

F. Offer.

The undersigned, having carefully examined the site of work, the Plans, *Standard Specifications, March 2020 Edition, Standard Details March 2020 Edition*, Supplemental Specifications, Special Provisions, Contract Agreement; and Contract Bonds contained herein for construction of:

PIN 012345.00 South Nowhere, Hot Mix Asphalt Overlay,

State of Maine, on which bids will be received until the time specified in the "Notice to Contractors" do(es) hereby bid and offer to enter into this contract to supply all the materials, tools, equipment and labor to construct the whole of the Work in strict accordance with the terms and conditions of this Contract at the unit prices in the attached "Schedule of Items."

The Offeror agrees to perform the work required at the price specified above and in accordance with the bids provided in the attached "Schedule of Items" in strict accordance with the terms of this solicitation, and to provide the appropriate insurance and bonds if this offer is accepted by the Government in writing.

As Offeror also agrees:

First: To do any extra work, not covered by the attached "Schedule of Items," which may be ordered by the Resident, and to accept as full compensation the amount determined upon a "Force Account" basis as provided in the *Standard Specifications, March 2020 Edition*, and as addressed in the contract documents.

Second: That the bid bond at 5% of the bid amount or the official bank check, cashier's check, certificate of deposit or U. S. Postal Money Order in the amount given in the "Notice to Contractors", payable to the Treasurer of the State of Maine and accompanying this bid, shall be forfeited, as liquidated damages, if in case this bid is accepted, and the undersigned shall fail to abide by the terms and conditions of the offer and fail to furnish satisfactory insurance and Contract bonds under the conditions stipulated in the Specifications within 15 days of notice of intent to award the contract.

Third: To begin the Work as stated in Section 107.2 of the *Standard Specifications March 2020 Edition* and complete the Work within the time limits given in the Special Provisions of this Contract.

Fourth: The Contractor will be bound to the Disadvantaged Business Enterprise (DBE) Requirements contained in the attached Notice (Additional Instructions to Bidders) and submit a completed Contractor's Disadvantaged Business Enterprise Utilization Plan with their bid.

Fifth: That this offer shall remain open for 30 calendar days after the date of opening of bids.

Sixth: The Bidder hereby certifies, to the best of its knowledge and belief that: the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of competitive bidding in connection with its bid, and its subsequent contract with the Department.

IN WITNESS WHEREOF, the Contractor, for itself, its successors and assigns, hereby execute two duplicate originals of this Agreement and thereby binds itself to all covenants, terms, and obligations contained in the Contract Documents.

Date

(Witness Sign Here)
Witness

CONTRACTOR

(Sign Here)
(Signature of Legally Authorized Representative
of the Contractor)

(Print Name Here)
(Name and Title Printed)

G. Award.

Your offer is hereby accepted.
documents referenced herein.

This award consummates the Contract, and the

MAINE DEPARTMENT OF TRANSPORTATION

Date

By: Bruce A. Van Note, Commissioner

(Witness)

BOND # _____

CONTRACT PERFORMANCE BOND
(Surety Company Form)

KNOW ALL MEN BY THESE PRESENTS: That _____
_____ in the State of _____, as principal,
and _____,
a corporation duly organized under the laws of the State of _____ and having a
usual place of business _____,
as Surety, are held and firmly bound unto the Treasurer of the State of Maine in the sum
of _____ and 00/100 Dollars (\$ _____),
to be paid said Treasurer of the State of Maine or his successors in office, for which
payment well and truly to be made, Principal and Surety bind themselves, their heirs,
executors and administrators, successors and assigns, jointly and severally by these
presents.

The condition of this obligation is such that if the Principal designated as Contractor in
the Contract to construct Project Number _____ in the Municipality of _____
promptly and faithfully performs the Contract, then this
obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the State
of Maine.

Signed and sealed this _____ day of _____, 20.... .

WITNESSES:

Signature.....
Print Name Legibly

Signature

SURETY ADDRESS:

.....
.....
.....

TELEPHONE.....

SIGNATURES:

CONTRACTOR:

.....
Print Name Legibly

SURETY:

.....
Print Name Legibly

NAME OF LOCAL AGENCY:

ADDRESS

BOND # _____

CONTRACT PAYMENT BOND
(Surety Company Form)

KNOW ALL MEN BY THESE PRESENTS: That _____
_____ **in the State of** _____, as principal,
and.....
a corporation duly organized under the laws of the State of and having a
usual place of business in
as Surety, are held and firmly bound unto the Treasurer of the State of Maine for the use
and benefit of claimants as herein below defined, in the sum of
_____ **and 00/100 Dollars (\$** _____ **)**
for the payment whereof Principal and Surety bind themselves, their heirs, executors and
administrators, successors and assigns, jointly and severally by these presents.

The condition of this obligation is such that if the Principal designated as Contractor in
the Contract to construct Project Number _____ in the Municipality of
_____ promptly satisfies all claims and demands incurred for all
labor and material, used or required by him in connection with the work contemplated by
said Contract, and fully reimburses the obligee for all outlay and expense which the
obligee may incur in making good any default of said Principal, then this obligation shall
be null and void; otherwise it shall remain in full force and effect.

A claimant is defined as one having a direct contract with the Principal or with a
Subcontractor of the Principal for labor, material or both, used or reasonably required for
use in the performance of the contract.

Signed and sealed this day of, 20

WITNESS:

SIGNATURES:

CONTRACTOR:

Signature.....

.....

Print Name Legibly

Print Name Legibly

SURETY:

Signature.....

.....

Print Name Legibly

Print Name Legibly

SURETY ADDRESS:

NAME OF LOCAL AGENCY:

.....

ADDRESS

.....

.....

TELEPHONE

.....

SPECIAL PROVISION
SECTION 104
GENERAL RIGHTS AND RESPONSIBILITIES
(Electronic Payroll Submission)
(Payment Tracking)

104.3.8.1 Electronic Payroll Submission The prime contractor and all subcontractors and lower-tier subcontractors must submit certified payrolls electronically using the Elation System web-based reporting. There is no charge for the use of this service. Paper payrolls will not be accepted. Additional information can be found at <https://www.maine.gov/mdot/contractors/bidderinfo/>.

104.3.8.2 Payment Tracking The prime contractor and all subcontractors and lower-tier subcontractors will track and confirm the delivery and receipt of all payments through the Elation System

SPECIAL PROVISION
SECTION 105
GENERAL SCOPE OF WORK
(Disadvantaged Business Enterprise Program)

Notice is hereby given that the Maine Department of Transportation (MaineDOT) has established a Disadvantaged Business Enterprise (DBE) goal for this project of 1.09%, to be achieved through race neutral measures.

The goal setting methodology was determined in accordance with the guidance provided in 49 Code of Federal Regulations (CFR) Part 26.45(g), via use of the Maine Department of Transportation's Unified Certification Program, and similar historical patterns for DBE utilization on ferry boat projects.

SPECIAL PROVISION
SECTION 106
QUALITY
(Warranty Provisions)

The following Section of the Standard Specifications is amended as follows:

106.9 Warranty Provisions:

106.9.1 Warranty By Contractor The Contractor unconditionally warrants and guarantees that the project will be free from Warranty Defects for one year from the date of Delivery Acceptance. For a related provision, see Section 107.9.3 – Notices / Final Inspection / Physical Work Completion.

Contractor guarantees to repair or replace to the reasonable satisfaction of the Department any defect in materials, equipment or workmanship provided by the Contractor or any defect resulting from Contractor provided designs, which is discovered within 12 months after the Vessel is delivered to the Department, provided that the Department shall within 30 Calendar Days after discovery of such defect, provide written notice of claim for such defect to Contractor. The Contract requirement of 12 months governs.

The liability of the Contractor to the Department hereunder on account of defects shall include the actual repair or replacement thereof. Any work required to be performed pursuant to the provisions of this Section shall be carried out, if practicable, at the shipyard of the Contractor or by the Contractor's own personnel at the Vessel's home port, or at a shipyard of the Contractor's choosing. If this causes undue delays or is not practicable in the Department's sole discretion, then the Department may have such work performed at any shipyard. In that event, the Contractor shall be liable to the Department for the documented expenses thereof at the commercial rate prevailing in such port area, including the cost of dockage of the Vessel, if necessary, with regard to the repair or correction of any defective workmanship or defective material guaranteed hereunder. Contractor shall guarantee such repair or replacement for an additional 90 days from the completion of such repair or replacement, unless such repair and replacement shall occur more than 90 days prior to the expiration of the 12-month guarantee period, in which case such repair or replacement shall be guaranteed until the end of the 12-month period.

If the Department discovers any Warranty Defects during the warranty period, the Contractor agrees to perform all remedial Work promptly and at no additional cost or liability to the Department

The Department's failure to provide timely written notice of any defect to Contractor shall constitute a waiver of any and all claims arising out of such defect.

Add the following to the end of the subsection:

The remedies contained in this provision shall be the Department's sole and exclusive remedies for defects after delivery, whether under tort, contract, warranty or otherwise and no other guaranties or warranties, whether expressed or implied by law or otherwise are or will be deemed to have been made by the Contractor. All implied warranties, including warranties of merchantability or fitness for ordinary or intended use are specifically excluded. This guaranty is given in lieu of all other guaranties or warranties or actions in tort (including negligence or strict liability) or contract against Contractor. In no event shall Contractor's aggregate liability (whether in warranty, tort or contract) exceed the contract price. In no event shall Contractor be liable to Department for any incidental, punitive or consequential damages, including but not limited to, loss of use or loss of profits. Notwithstanding any provision contained herein, the Contractor shall remain liable for supplemental and/or Liquidated Damages.

Any guaranties from subcontractors to Contractor in excess of the guaranty provisions shall be assigned by the Contractor to the Department at the end of the guaranty period.

Prior to the expiration of the guaranty period, a final guaranty survey of the Vessel shall be conducted by the Department/Maine State Ferry Service. At such survey, Department/Maine State Ferry Service shall inspect the Vessel for any defects. Such survey shall be held at such port as Department shall designate.

All material, equipment and workmanship guaranteed hereunder, which are found to be defective as a result of said inspection shall be corrected, repaired, or replaced by the Contractor at its expense to the reasonable satisfaction of the Department. Department shall give seven (7) calendar days prior written notice to Contractor of the time and place of the final guaranty survey and shall give Contractor an opportunity to have a representative present during the survey.

SPECIAL PROVISION

SECTION 107

TIME

(Contract Time and Contract Completion Date)

Add the following paragraph to 107.1 Contract Time and Contract Completion Date:

The Date for Delivery of the Vessel to the Maine State Ferry Service Terminal in Rockland, Maine is **900 Calendar Days** from the date of Notice to Proceed. After Award of the Contract and within 30 calendar days, the Shipyard shall attend a kickoff meeting with the Department. The Notice to Proceed will be issued immediately after the kickoff meeting.

Failure to meet the Date for Delivery of the Vessel will result in Liquidated Damages at the rate set out in Standard Specification 107.7.2 - Schedule of Liquidated Damages.

SPECIAL PROVISION
SECTION 107
TIME
(Scheduling of Work)

Section 107 of the Standard Specifications (Time) is amended as follows:

107.4.2 Schedule of Work Required Within three weeks of execution of the Contract and before beginning on-site activities, the Contractor shall provide the Department with its Schedule of Work in a Critical Path Method (CPM) in the form of an activity on node (AON) diagram. This CPM schedule will become the basis for claims involving Delay. The Contractor shall plan the Work, including the activity of Subcontractors, vendors, and suppliers, such that all Work will be performed in Substantial Conformity with its Schedule of Work. The Schedule must include sufficient time for the Department to perform its functions as indicated in this Contract, including QA inspection, testing, approval of the Contractor's QCP, and review of Working Drawings.

At a minimum, the Schedule of Work shall show the major Work activities, milestones, durations, submittals and approvals, a timeline, all trades, main equipment deliveries and key events. Milestones to be included in the schedule include (A) start of Work, (B) beginning and ending of planned Work suspensions, (C) Completion of Physical Work, and (D) Completion. If the Contractor plans to complete the Work before the specified Completion date, the Schedule of Work shall so indicate.

The Department will review the Schedule of Work and provide comments to the Contractor within 20 days of receipt of the Schedule of Work. The Contractor will make the requested changes and issue the finalized version to the Department.

SPECIAL PROVISION
SECTION 108
PAYMENT
(Scheduling of Work)

The following section is amended as follows:

Remove Sections:

108.1.1 Use of Plan Quantities

108.1.3 Provisions Relating to Certain Measurements, only after “Each” payment is payment is per complete unit.

108.2.3 Mobilization Payments

108.4.1 Price Adjustment for Hot Mix Asphalt

All other sections and subsections remain unchanged.

108.2 Progress Payments

108.2.1 Generation of Progress Payment Estimates

The bidder shall provide a Schedule of Values to the Department prior to an award being made. This schedule will be reviewed and approved by the Department at the time of the award and will form the basis from which to make progress payments on the project. The Schedule of Values should have sufficient detail to cover all major components or areas of construction for the vessel as well as provide an amount for mobilization, bonds, and insurance. All areas listed should be measurable and may require receipt of invoices at time of payment for materials and equipment.

When the Contractor determines that an installment payment is about to fall due, (s)he will give the Resident fourteen (14) days’ notice thereof. The Contractor will then prepare an invoice, addressed to the Resident who will, on being satisfied that the relevant work has been completed, certify the invoice for payment. All payments made by the Department to the Contractor are so made strictly on the condition that all sums due by the Contractor to its suppliers and subcontractors are promptly and fully paid. The Department reserves the right to request executed waivers of liens and other claims of any or all such suppliers and subcontractors as a condition of making any of the required payments. The Department may request that the Contractor submit backup documentation, including copies of receipts, invoices, and itemized payments to Subcontractors.

At the time Contractor requests any payment under this Agreement, Contractor must give written guaranty to the Department that the Vessel, its materials, equipment, fittings and supplies and every part thereof is free and clear of any and all liens or rights in rem of any kind, except such liens in rem arising from Department’s other contractors, suppliers, and materialmen, or arising because of the Department’s default in payment to Contractor.

It is proposed to make payments monthly, unless the amount of work warrants a quicker schedule, and such quicker schedule is agreed to by the Department in writing. Payments will not be made more frequently than twice monthly. No such estimates or payment will be made if, in the judgment of the Resident, the Work is not proceeding in accordance with the provisions of the Contract, or when the total value of the Work performed since the last estimate amounts to less than \$5,000. The Contractor agrees to waive all claims related to the timing and amount of such estimates.

The making of partial payments shall in no way prevent the Department from asserting any right or remedy accruing to them under this specification because of the failure of Contractor to perform the work or deliver the completed Vessel.

108.2.2 Payment All payments made are subject to correction in subsequent Progress Payments and the Final Payment. For related provisions, see Sections 108.8 - Final Payment, and 108.9.2 - No Inflation Adjustments/ Interest.

SPECIAL PROVISION
SECTION 108
PAYMENT
(Steel Cost Adjustment)

This Special Provision was developed to minimize the risk to the Contractor and steel fabricator(s) associated with current volatile fluctuations in the cost of steel materials.

Description. Steel cost adjustments will be made to provide additional compensation to the Contractor, or a credit to the Department, for fluctuations in steel prices. All prices and costs are in U.S. Dollars (USD).

Types of Steel Products: An adjustment will be made for fluctuations in the cost of reinforcing steel (all reinforcing/reinforcement items included in Standard Specification Section 503), and plate and rolled-shape steel used in the fabrication of steel for Contract pay items covered under the following sections of the Standard Specification:

- Section 503, Reinforcing Steel
- Section 504, Structural Steel
- Section 507, Railings

The adjustments shall apply to the above items when they are part of the original Contract or Extra Work added by Contract Modification and paid for by agreed unit prices. The adjustments shall not apply when the item is Extra Work added by Contract Modification and paid for at a lump sum price or by Force Account.

Documentation. Sufficient documentation shall be furnished to the Department to verify the following:

1. The full Purchase Order weight and date of the material order with signature.
2. The quantity of steel, in pounds, incorporated into the various pay items covered by this Special Provision. The Department reserves the right to verify submitted quantities.

Method of Adjustment. Steel cost adjustments shall be computed as follows:

$$SCA = Q \times D$$

Where: **SCA** = steel cost adjustment, in USD
Q = quantity of steel incorporated into the work, in pounds. For 503 items, this quantity shall be the quantity included in the schedule of items; for 504 and 507 items, this quantity shall be the weight of steel included in the accepted as-built Working Drawings; the weight of scrap steel and steel used for convenience shall not be included in these weights.
D = price factor, in USD per pound

$$D = MP_B - MP_A$$

Where: **MP_B** = The Platts Steel Spot Market Prices for the bid item listed in the table below for the month the material Purchase Order, including the total weight of steel and date of the order, is executed. The price will be converted from USD per ton to USD per pound.

MP_A = The Platts Steel Spot Market Prices for the bid item listed in the table below, for the month prior to the bid opening, for work paid for at the Contract price; or for the month the Contract Modification is signed by the Contractor for Extra Work that is paid for by agreed unit prices. The price will be converted from USD per ton to USD per pound.

The estimated total weight of the steel and market price identifier that will be used to calculate the steel cost adjustment for the respective Pay Items is shown in the following table:

Standard Specification Section	Estimated Total Weight of Steel (lbs.)	Platts Market Price
504, Structural Steel Plating	537,600	Plate
504, Steel Shapes	324,800	Plate

No steel cost adjustment will be made for any products manufactured from steel having a mill shipping date before the Contract Bid date.

If the Contractor fails to provide the required documentation, the method of adjustment will be calculated as described above, but the **MP_B** will be based on the date the material arrives at the jobsite. In this case, an adjustment will only be made when there is a decrease in steel costs.

Basis of Payment. Steel cost adjustments may be positive or negative.

Steel cost adjustments will be calculated by the Department and will be paid or deducted when all other Contract requirements for the applicable items of work are satisfied. Adjustments will only be made for fluctuations in the cost of the steel as described herein. No adjustments will be made for changes in the cost of manufacturing, fabrication, shipping, storage, etc.

The steel cost adjustments shall not apply during any time after the Contract Completion Date when the Contractor is being assessed Liquidated Damages.

Cost adjustments, if any, shall be made by Contract Modification in accordance with this Special Provision.

SPECIAL PROVISION
SECTION 110
INDEMNIFICATION, BONDING, AND INSURANCE
(Insurance)

Section 110 Indemnification, Bonding, and Insurance, of the Standard Specifications is amended as follows:

110.3 Insurance

Add the following to the end of the subsection:

The Contractor at its own cost shall fully insure and keep insured – in the joint names of the MaineDOT and the Contractor – the Vessel and the machinery, materials and things used or intended for use in the construction and outfit thereof equivalent to the value of these or a sum of not less than the total of installments paid by the MaineDOT plus 10 percent (whichever is greater). Furthermore, the Contractor at its own cost shall fully insure and keep insured in the joint names of the MaineDOT and the Contractor all modifications, spare parts, and additional equipment provided by the MaineDOT as may be agreed upon from time to time during the construction of the Vessel.

Such insurance policies shall protect the Vessel against losses from fire, launching and all other risks, accidents and damages (excluding War Risks) during and after the construction of the Vessel, while the Vessel remains in the harbor or the port of construction, when the Vessel is engaged on, or in connection with, any trials or delivery made under this Contract and until the time the Vessel is accepted by the MaineDOT as evidenced by an executed Bill of Sale transferring title to the MaineDOT, a valid Coast Guard Certificate of Inspection to carry passengers, freight, and vehicles, and an executed Delivery Certificate.

The Contractor shall from time to time renew the insurance policies for the Vessel before their expiration and shall pay and continue to pay all premiums that become payable in respect of such insurance. Within seven days from the date when such renewed insurance becomes effective, or the premium paid, the Contractor shall deliver to the MaineDOT certificates that prove the policy or policies of insurance have been purchased.

If the Contractor defaults on such insurance, fails to keep up such insurance or fails to obtain any such renewal of insurance as aforesaid, the MaineDOT shall be at liberty to procure insurance, whereupon the Contractor shall repay to the MaineDOT the amount of the premiums paid, or the MaineDOT shall be at liberty, at its option, to deduct the amount thereof from any sums payable to the Contractor under this Contract. Nothing herein contained nor anything done or omitted to be done by the MaineDOT in pursuance thereof shall diminish or affect the Contractor's obligation to keep the Vessel, machinery, material, and things insured to the full amount of their value in accordance herewith until the vessel is accepted, nor shall it diminish or affect the liability of the Contractor in respect thereof. All such policies shall name the MaineDOT as additional insured and shall be non-cancelable except on ten (10) days prior written notice to the MaineDOT.

If any event shall happen giving rise to a claim under any insurance policy to be effected under this Section, or if the Vessel shall become a total or constructive total loss before acceptance by the MaineDOT, the MaineDOT (without prejudice to its rights to have this Contract performed within such extended time and at such price as may be mutually agreed) shall receive the moneys that shall become payable under whichever of the policies the claim shall arise and retain the same, paying the Contractor the difference between the aggregate of such sums as they may have previously paid the Contractor under this Contract and such total amount as the Naval Architect may certify would have been payable to the Contractor if this Contract had been terminated at the time of the event giving rise to the claim. The MaineDOT, at its discretion, may instruct the Contractor to arrange War Risk insurance, and the Contractor is then obliged to do so without delay, but such costs incurred are at the MaineDOT's expense.

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

SPECIAL PROVISION
SECTION 853
(Ferry Vessel Construction)

853.01 Description

Contractor shall furnish all plant facilities, labor, material, and equipment, and shall perform all work necessary to construct, launch, outfit, test and deliver the Vessel. Contractor shall develop additional plans, sketches and technical data which are necessary to construct the Vessel in a seaworthy manner, but which are not specifically set forth in the Plans and Specifications. Contractor shall also be responsible for the receipt, storage and installation of outfitting and equipment required.

853.02 Plans and Specifications

The Plans and technical specifications for the construction of the Vessel are those designated in the document titled (Specifications) “Maine State Ferry Service Contract Specifications (D367-T8) 104-foot LOA Passenger/Vehicle Ferry”, and (Plans) Drawing Series No. D367, Title Sheet and Referenced Drawings.

853.03 Hull Number

Contractor shall establish a hull number for the vessel at project kickoff.

853.11 Title

Title to the Vessel under construction and title to materials, machinery, equipment, fittings, or supplies delivered, bought, or ordered for use in the construction of said Vessel shall vest in the Department to the extent of any payments made thereon, at the point when such materials, equipment, fittings and supplies are delivered to the Contractor’s plant or other offsite place of storage approved by the Department. Accumulated payments by the Department to the Contractor shall be deemed sufficient to cover the value of all material, machinery, equipment, fittings and supplies located at the Contractor’s plant or in storage elsewhere, provided, however, that the risk of loss or damage to such materials, machinery, equipment, fittings and supplies and the Vessel itself shall remain with the Contractor, and the Department shall not be deemed to have waived the right to require Contractor to repair or replace defects at Contractor’s expense and to deliver the Vessel with all contract work completed as required by this specification. The Contractor shall have equity in such materials, machinery, equipment, fittings and supplies and completed contract work to the extent not paid for by the Department. The Department may, by written direction, require that title vest in the Department upon delivery of such materials, machinery, equipment, fittings, or supplies to the carrier for transportation to Contractor’s plant or approved offsite storage. Title to all scrap material and to all material which is surplus to the requirements of this Agreement shall vest in the Contractor. Notwithstanding the provisions of this specification, the Contractor shall be subject to the risk of loss of the Vessel and all materials, machinery, equipment, fittings, or supplies until the Vessel is by the Department as evidenced by an executed Bill of Sale transferring title to the Department, a valid Coast Guard Certificate of Inspection to carry passengers, freight, and vehicles, and an executed Delivery Certificate.

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

Without impairing or releasing the title vested in the Department, to fully ensure that title to the Department's Property for which Department has paid rests with the Department, this specification constitutes the grant of a UCC security interest by Contractor to the Department covering the Department's Property.

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

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

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

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

853.12 Rights to the Design and Drawings

No part of the Plans or Drawings or other relevant information is to be made available by the Contractor to any other party, except as required to fulfill the contract obligations, without the prior written approval of the Department and Naval Architect. The Contractor shall not use, or allow the use of, all or any portion of the design of the vessel, or of all or any portion of the

Specifications, Plans, or Drawings (including but not limited to the Bid Documents and the As-Built Drawings), without the prior written approval of both the Department and Naval Architect, which approval can be withheld for any or no reason.

853.13 Liens

Contractor shall furnish evidence satisfactory to the Department that the Vessel, materials, equipment, fittings, or supplies are free and clear of such liens or rights in rem.

If such a lien or right in rem as Contractor is required to guaranty against hereunder is filed or asserted against or attached upon the Vessel, any materials, equipment, fittings or supplies, Contractor shall promptly notify the Department of such lien or right in rem and shall no later than fifteen (15) calendar days thereafter secure the discharge or release of such lien or right in rem. If such release or discharge is not available under the law, Contractor shall immediately take such steps as in the opinion of the Department shall prevent such lien or right in rem from delaying the contract work, and shall indemnify and hold harmless the Department from all costs, charges, and damages by reason of such lien or right in rem.

Upon completion of the Vessel consistent with the Plans and Specifications, and upon delivery of the Vessel to the Department for its acceptance, the Contractor shall warrant that the Vessel and all its appurtenances are free and clear of all liens, maritime or otherwise, and shall further agree to indemnify and hold harmless the Department from all costs, charges, and damages, including but not limited to, attorney's fees associated therewith, by reason of such lien or right in rem.

The Department, at its option, may satisfy a claim based upon such lien or right in rem as the Contractor is required to guaranty against hereunder in order to secure its discharge or release. In such event, the Department shall deduct such sum from any payments due or to become due the Contractor. Should the cost of satisfying such lien or right in rem be in excess of the amount which is due or to become due to the Contractor, Contractor shall pay the amount of such excess to the Department upon demand.

The Department may also, at its option, without securing the discharge or release of such lien or right in rem as provided above, withhold any payments due or to become due to the Contractor in an amount which is determined by the Department to be required to secure the release or discharge of such lien or right in rem, which amount shall include the estimated amount of all expenses reasonably expected to be incurred by the Department in connection therewith; provided, however, that the Contractor has not released or discharged such lien or right in rem.

853.15 Familiarization and Training

CONTR shall provide a training procedure/schedule for MaineDOT vessel operators and maintenance staff. The training procedure/schedule shall be submitted to MaineDOT for review and approval at a minimum 90 days prior to commissioning the vessel. This training may include: training at the dock and underway in and around Penobscot Bay; MaineDOT crew shadowing the delivery crew for a day to week; giving advance notice for travel to MaineDOT for operators and maintenance staff to be on site during commissioning; trouble shooting while

the vessel is still at the construction yard. The intent of the familization and training is for the MaineDOT operators to be fully comfortable operating the brand new plug in hybrid ferry.

853.14 Reporting of Subcontracts – Maine Standard Specifications Section 104.5 Subcontracting

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

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

853.14 As-Builts

CONTR shall be responsible for submitting all as-built drawings to MaineDOT within 30 days of final acceptance of the vessel by MaineDOT. An electronic copy and 1 full size paper copy will be required.

853.15 Other Requirements

Contractor shall comply with all laws, rules, regulations, and requirements of the United States affecting the construction and testing of the Vessel, as set forth in this Contract, the Plans and Specifications. Contractor shall also comply with all laws, rules, regulations, and requirements of any state in which the Vessel is constructed, tested or repaired, with all laws, rules, regulations, and requirements of local authorities, with all applicable laws of the State of Maine and rules and regulations of the State of Maine, Department of Transportation. Contractor shall procure, at its own expense, any permits required under federal, state, or local law as may be necessary in connection with any contract work set forth in this Contract.

The Vessel, with its inventory, equipment, and machinery, shall be built strictly in accordance with all applicable statutes, rules, and regulations (and directives issued pursuant thereto) of the United States Coast Guard.

The Contractor must pay at the very least the State minimum wage rates, submit weekly certified payroll statements, and comply with all other Department of Labor laws. Also reference Maine Standard Specifications Section 104.3.8 Wage Rates and Labor Laws.

853.16 Method of Measurement

New Ferry Vessel Construction will be measured for payment by Lump Sum, complete, and accepted.

853.17 Basis of Payment

The quantity of Ferry Vessel Construction will be full compensation to furnish all plant facilities, labor, material, and equipment, and shall perform all work necessary to construct, launch, outfit,

test and deliver the vessel to Maine, as shown in the Plans and Specifications. The cost of a portion of the steel will be adjusted per Special Provision 108.

Payment will be made under the following pay items:

<u>Pay Item</u>		<u>Pay Unit</u>
853.20	Ferry Vessel Construction	Lump Sum

MAINE DEPARTMENT OF TRANSPORTATION
CONTRACT SPECIFICATIONS (D-372-T-10)
207 FOOT LOA, DOUBLE-ENDED HYBRID PASSENGER/VEHICLE FERRY



Prepared by:
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100 Grossman Dr. Suite 205

Braintree, MA 02184

September 12, 2024

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SECTION 000 GENERAL PROVISIONS

0.1 INTRODUCTION

0.1.1 GENERAL SCOPE

These Technical Specifications are Performance Based and provide the requirements for the construction of a 207 foot LOA Passenger/Vehicle Ferry for the State of Maine Department of Transportation (MaineDOT); 16 State House Station; Augusta, ME 04333-0016. The Maine State Ferry Service (MSFS); P.O. Box 645; Rockland, ME 04841, operates the vessels as a division of MaineDOT.

The vessel shall conform to all regulations that apply to a 46 CFR Subchapter “H” Passenger Vessel. The vessel is designed to have a Gross Regulatory Tonnage of less than 500 GT.

MaineDOT has selected ABB Inc. as the power and propulsion solution provider for this project. ABB Inc. shall provide the integrated power and propulsion system inclusive of Caterpillar/Ramme gensets, Ramme Propulsion Motors, Corvus energy storage system, propulsion controls, DC and AC Switchboards, Transformers, and various electrical panels and controls as described in the detailed ABB scope documents and this specification. ABB will provide integration support to the CONTR shipyard during the build process.

The Intended Service Life of this vessel shall be (25) Twenty-five years. All products and equipment provided, whether referenced in these SPECIFICATIONS or not, shall be “supported” by the manufacturer for a minimum (10) ten-year life span.

The Specification term “Provide and Install” means that the piece of equipment or system shall be purchased and installed on the vessel in working condition. For example(s), floodlights or navigation lights that are to be “provided and installed” will be provided with foundations, wired, powered, switched, and tested complete. If cable is required to bring power to a light that is to be “provided and installed,” that cable shall be provided and installed as part and parcel of the light installation. If a kick-pipe is required, that kick-pipe shall be part of the installation.

0.2 ABBREVIATIONS

As used throughout these Specifications, the following partial list of terms and abbreviations shall have the meanings stated:

ABB	ABB Group
ABS	American Bureau of Shipping (classification society)
ADA	Americans with Disabilities Act

ADAAG	ADA Accessibility Guidelines
AIS	Automatic Identification System
AMR	Auxiliary Machinery Room
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
CCTV	Closed Circuit Television
CFR	Code of Federal Regulations
CHT	Sewage Tank “Collection & Holding Tank”
COI	Certificate of Inspection
COLREGS	International Regulations for Preventing Collisions at Sea
CONTR	CONTRACTOR, YARD, or SHIPYARD
CONTRACT	Contract between MaineDOT and the CONTR
CuNi	Copper Nickel Alloy
CRES	Stainless Steel (SST)
DESIGN AGENT	Gilbert Associates Inc. (Naval Architect)
DGPS	Differential Global Positioning System
DFT	Dry Film Thickness
DNV	Det Norske Veritas (classification society)
DOJ	U.S. Dept. of Justice
DOT	U.S. Dept. of Transportation
DWG	Contract Drawing or Drawings
E-LIGHT	Light on Emergency Lighting Circuit
ECM	Engine Control Module
EDG	Emergency Diesel Generator
EDM	Electronic Display Module
EPA	Environmental Protection Agency
EPIRB	Emergency Position Indicating Radio Beacon

ER	Engine Room
ESS	Energy Storage System (Li-Ion Battery Banks)
FCC	Federal Communications Commission
FMEA	Failure Mode Effect Analysis
FO	Fuel Oil (in US gallons)
FRP	Fiber Reinforced Plastic
FTA	Federal Transit Administration
FW	Freshwater (in US gallons)
GPM	Gallons per Minute
GT	Gross Ton (Regulatory volume measurement unit)
HP	Horsepower
HVAC	Heating, Ventilation, and Air Conditioning
IAW	Image Analysis Workstation
IBA	Inflatable Buoyant Apparatus
IEEE	Institute of Electrical & Electronics Engineers
ITC	International Tonnage Convention
IWO	In Way Of
LCG	Longitudinal Center of Gravity
LT	Long Ton 2240 Lbs.
MDOT	Maine Department of Transportation, OWNER
ME	Main Engine
MSFS	Maine State Ferry Service, Division of MaineDOT
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
NPS	National Pipe Schedule
NT	Net Ton (Regulatory volume measurement unit)
NVIC	Navigation and Vessel Inspection Circular
OCMI	Officer in Charge of Marine Inspection

OSHA	Occupational Safety and Health Administration
OWNER	Maine Department of Transportation - Maine State Ferry Service
MARPOL	International Convention for Prevention of Pollution from Ships
MSO	Marine Safety Office, USCG
MSC	Marine Safety Center, USCG (Washington, DC)
MSFS	Maine State Ferry Service (part of MaineDOT)
NACE	National Association of Corrosion Engineers
NUC	Not Under Command
OF or OFE	Owner Furnished or Owner Furnished Equipment (MaineDOT furnished equipment)
OREP	Owner's Representative (On-site MaineDOT Representative)
OWNER	Maine Department of Transportation (MaineDOT)
P	Port (port side)
PFD	Personal Flotation Device
PLC	Programmable Logic Controllers
POC	Point of Contact
P&S	Port and Starboard (sides)
PTO/PTI	Power Take Off / Power Take In
QA	Quality Assurance
QAWT	Quick Acting Watertight (door)
QC	Quality Control
RFP	Request for Proposal
S	Starboard (side)
SEAL WELD	Structure which is double continuously welded
SHIPYARD	CONTR, CONTRACTOR, or YARD
SNAME	Society of Naval Architects & Marine Engineers
SSDG	Ship's Service Diesel Generator
SSPC	Society for Protective Coatings

SST	Stainless Steel (CRES)
SWBS	Ship Work Breakdown Structure (numbering system)
TWIC	Transportation Workers Identity Card
UL	Underwriters Laboratories
USCG	United States Coast Guard
USG	U.S. Gallons
USPHS	United States Public Health Service
USSG	United States Standard Gauge
UV	Ultra-violet
VCG	Vertical Center of Gravity
VESSEL	Ship Under Contract
WC	Water closet (toilet)
WTD	Watertight Door(s)
YARD	Contracting Shipyard (same as CONTR)

0.3 EXPANDED DEFINITIONS

0.3.1 OWNER FURNISHED

All equipment herein specified as MaineDOT furnished (OFE) is to be installed by the YARD in such condition that it is completely operational and serviceable under normal conditions of vessel operations. Such installations are to adhere to all applicable specifications of Regulatory Agencies and are to be to the satisfaction of the MaineDOT. This includes, but is not limited to, the following:

1. Time and materials for assembly
2. Time and materials for positioning and proper securing
3. Time and materials for connections of piping, wiring, etc.
4. Time and materials for operational testing

OFE equipment, when specified, shall be new equipment in current production. It shall be supplied to the CONTR with installation instructions, vendor references, and vendor POC. All

equipment, which is not herein specified as MaineDOT furnished (OFE), shall be provided and installed by the CONTR.

0.3.2 GOOD SHIPBUILDING PRACTICE

The term "good shipbuilding practice" means construction practices which are in accordance with soundly engineered, including approved welding procedures with applicable welding codes, current advisory circulars and detailed drawings reviewed and/or approved by the MaineDOT and USCG/ABS. These drawings are to meet the requirements contained within this document of SPECIFICATIONS. Construction and testing shall conform to regulatory agency and industry accepted standards so as to ensure that each vessel will meet the general and particular design requirements.

0.3.3 QUALITY CONTROL

Inspections by MaineDOT are for the purpose of verifying the CONTR's Quality Control Program. These Inspections are not to be used as a substitute for in-process control of quality by the CONTR. The CONTR shall provide MaineDOT, as a part of the CONTR's Proposal, an outline with pertinent details of their current Quality Control Program and Procedures. The CONTR's Quality Control shall follow applicable section of Standard Specifications Section 106.

0.3.4 SOLE SOURCE/BID SUBSTITUTIONS

It is not necessary to quote machinery and equipment as "sole source" unless expressly stated in these SPECIFICATIONS as such or designated as "Proprietary" by MaineDOT.

Any substitution must be equal to the specified model, must be sufficiently documented to prove equality, and must meet the performance requirements of the vessel. If a substitution is proposed, the CONTR shall present for MaineDOT's review and approval written documentation of "equality".

The CONTR is responsible for all additional costs associated with proposed substitutions including, but not limited to, required engineering expenses, and modifications to foundations, connection sizes, electrical interfaces, etc. which will render the substitution fully compatible with other installed equipment. In this regard, the SPECIFICATIONS herein are guidelines for minimum performance requirements. If those SPECIFICATIONS are not offered by a particular manufacturer, product, or model, the CONTR will be expected to include a separate list of all discrepancies. Substituted manufacturers, products, or models will not be considered unless they have been demonstrated to be equal to or exceeding the quality, durability and design and the minimum performance functions of the specified equipment.

Proposed substitutions shall not adversely affect any other component or system in the vessel; adversely affect the vessel's total performance; or relieve the CONTR from any obligation related to performance, warranty, etc. Any proposed substitution shall function as effectively as

the equipment specified with no increase in required maintenance or need for premature replacement.

0.3.5 IN PROGRESS SUBSTITUTIONS

It is the intent of these SPECIFICATIONS that all equipment shall be provided as specified herein. Substitutions may be considered on a "case by case" basis upon timely written notice from the CONTR to MaineDOT; or, in the case of a MaineDOT generated substitution, upon timely written notice from MaineDOT to the CONTR. Such written notice shall include written documentation that the equipment and/or components proposed qualify as equal to those specified and that spare parts and service for them are readily available. MaineDOT or the CONTR is under no obligation to accept substitutions by either party of any materials or equipment unless this written process is adhered to and both have signed off in agreement. MaineDOT has the final decision concerning the acceptance of substitutions.

0.3.6 SUBSTITUTION CHECK LIST

The following list may be used as a guide for parameters to consider when bidding substitutions or proposing in progress substitutions:

- Regulatory Body approval
- Compliance with FTA Buy America requirements where applicable
- Dimensional characteristics
- Conformance to salient features
- Electrical characteristics
- Weight
- Capacities (GPM, pressure, volume, wattage, HP, etc.)
- Materials of Construction (high quality marine grade)
- Quality of fabrication, welding, and construction details
- Constructed to recognized standards (UL, IEEE, ANSI, ASTM, etc.)
- Functional characteristics
- Safety features
- Rate service duty life
- Manufacturer's ability to support
- Industry performance
- Maintenance life cycle

0.4 GENERAL SPECIFICATION REQUIREMENTS

0.4.1 GENERAL

These TECHNICAL SPECIFICATIONS provide details for the Construction and Delivery of a 207 ft LOA, Subchapter "H" passenger/vehicle ferry. The vessel shall have (2) diesel engine generator sets that meet applicable EPA Emission Standards for newly manufactured Marine

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Engines of their class (in conformance with EPA Emissions Standards “keel laying” requirements); (2) permanent magnet generator motors, 550 KW each; (2) 950 KW electric propulsion motors; (2) reduction gears and (1) 138 eKW emergency generator. All generator engines shall meet the EPA Emission Standards which apply to their HP and service. The vessel shall conform to the regulations that apply to a Subchapter “H” Passenger Vessel (46 CFR Subchapter “H” and 46 CFR Subchapter “S”). The vessel Gross Regulatory Tonnage shall not exceed 500 GT. The vessel is designed for and will be certified for “Lakes, Bays, and Sounds Cold Water Service” and shall comply with the requirements of FTA BUY AMERICA where applicable. These SPECIFICATIONS and the accompanying CONTRACT DRAWINGS are intended to give the CONTR all necessary information for the completion of and submittal to MaineDOT of a Construction Proposal. The submitted Construction Proposal shall provide for the delivery to MaineDOT of a completely constructed, outfitted, seaworthy, and operational vessel that meets all applicable requirements of the applicable regulatory bodies.

0.4.2 GENERAL VESSEL DESCRIPTION

The vessel described by these SPECIFICATIONS will be a hybrid electric, electric motor propelled, double-ended, Passenger/Vehicle ferry designed and constructed to comply with the requirements of 46CFR Subchapter “H” Lakes, Bays, & Sounds for service on MaineDOT routes serving the State of Maine coastal islands.

Frame numbers are bow to stern, FR0 to FR101. The bow is considered the Islesboro end and the stern is the Lincolnville end. The rapid charging device will be on the Lincolnville end of the vessel. Passenger boarding and vehicle loading will be on the Main Deck bow or stern loading over shore side ramps which are landed on the vessel’s deck. The vessel will have (3) Main Deck lanes for a capacity of approximately 35 cars and trucks. The centerline vehicle lane is capable of accommodating trucks of legal over-the-road height limits. CONTR shall ensure that an overhead clearance of 16’-0” is maintained along the center vehicle lane, and that the inboard longitudinal bulkheads port and starboard of the center vehicle lane are clear of any obstructions or mounted equipment up to a height of 16’-0” above the Main Deck. In the outboard car lanes, CONTR shall ensure that an overhead clearance of 8’-0” is maintained along the outboard vehicle lane. Piping, ducting, wiring, lighting, sprinkler heads, and any other obstructions shall be clear of this height in the vehicle lanes.

It is the responsibility of the CONTR to maintain open communication with MaineDOT as to the particular details of passenger and vehicle loading and off-loading requirements.

0.4.3 GENERAL CHARACTERISTICS

Length Overall	207'-0" (63.1 Meters)
Length between Perpendiculars (LBP)	198' - 4" (60.5 Meters)
Beam Molded	40'-0" (12.2 Meters)
Depth Molded	14' - 0" (4.3 Meters)
Displacement	830 LT at 9'-4" Waterline
Fuel Oil Capacity (100%)	5000 USG (two 2500 Gal. tanks)
Potable Water Capacity (100%)	4500 USG (one 4500 Gal. tank)
Lube Oil Capacity (100%)	500 USG (one 500 Gal. tank)
Dirty Oil Capacity (100%)	500 USG (one 500 Gal. tank)
Bilge Slops Capacity (100%)	500 USG (one 500 Gal. tank)
Sewage (CHT) Capacity (100%)	3000 USG (one 3000 Gal. tank)
Crew Space Lift Tank (100%)	65 USG (approximate)
Emergency Generator Fuel (100%)	120 USG (approximate)
Classification:	USCG Subchapter "H"
Passenger Capacity:	250
Crew Complement:	Per USCG C.O.I.
Service Speed	13.0 knots

0.4.4 MANUFACTURERS' REPRESENTATIVES

Whether or not it is specifically stated in these SPECIFICATIONS, when it is required by the equipment manufacturer, by the specialized technical nature of the installation, for warranty purposes, or when work is outside the normal scope of the CONTR's work force, the CONTR is to provide the services of Manufacturers' Representatives, at the CONTR's cost for such assistance and expertise as is required for the proper installation, on-line testing, calibration, adjustments, etc. of CONTR Furnished and OFE equipment. At a minimum, Manufacturers' Representatives shall be on site for supervision of the installation and testing of reduction gears,

propulsion and auxiliary control systems, steering gear, and electronic navigation equipment. See ABB technical specification for additional requirements.

0.5 CORRESPONDENCE & COMMUNICATIONS

The CONTR shall provide MaineDOT with a copy of all communications relating to vessel construction which the CONTR has with Regulatory Bodies, in particular, the USCG Marine Safety Center (MSC) Washington, and the Local OCMI.

The CONTR shall invite MaineDOT to be present during all discussions relating to this vessel which they may have with the Representatives of Regulatory Bodies and, in particular, with the Local USCG OCMI or representatives of that office.

These documents and discussions may include, but are not limited to, the design, construction, installation of equipment and machinery, testing, sea trials, delivery, and operation of the vessel.

The CONTR shall submit their proposed Correspondence and Communication Procedures to MaineDOT for approval within 30 days following Contract Award.

Also reference MaineDOT Standard Specifications Section 104.4 Communications and Coordination.

0.6 REGULATIONS, DOCUMENTATION, CERTIFICATION

0.6.1 COMPLIANCE

The vessel, as delivered, shall comply with the requirements of applicable Local, State and Federal Regulatory Agencies. These shall include, but may not be limited to:

- USCG: 46 CFR Subchapter “H” Passenger Vessel (Lakes, Bays & Sounds; Partially Protected Waters; Cold Water Service)
- Federal Transit Administration Buy America policies for Rolling Stock (49 CFR Part 661, 49 USC 5323)
- USPHS: Publication No.393, "Handbook on Sanitation of Vessel Construction"
- Federal Communications Commission (FCC)
- United States Access Board (USAB) (Proposed) Passenger Vessel Accessibility Guidelines, July 2, 2013 (as far as practical), USDOT 49 CFR Parts 39, Transportation for Individuals with Disabilities: Subpart E Accessibility of Vessels (currently reserved).
- For guidance: ABS Rules for Building and Classing Marine Vessels, and Rules for Steel Vessels Under 200 Feet in Length (vessel shall NOT be classed).
- I-EEE45 Recommended Practice for Electric Installations on Shipboard in Institute of Electrical & Electronics Engineers Standards #45 (IEEE)

- USCG NVIC 12-82 Recommendations on Control of Excessive Noise
- IES Recommended Practice for Marine Lighting
- Admeasurement Rules Regulatory (US Domestic). Vessel to receive both US Regulatory and ITC tonnage admeasurement.
- IEC International Electrotechnical Commission
- UL Applicable Standards for Marine Electrical Equipment & Lighting Fixtures
- NDAA Section 889 for onboard electronic security systems and telecommunication systems
- ASTM F1155 Standard Practice for Selection of Piping System Materials
- ASTM F1321 Standard Guide for Conducting a Stability Test
- ASTM F3353-19 Standard Guide for Shipboard Use of Lithium-Ion (Li-ion) Batteries
- Maine Department of Transportation Standard Specifications, Current Edition

If a conflict exists between State and Federal accessibility requirement/code the more stringent code must be followed. In addition, all design elements shall comply with the minimum Federal requirements/code even if a State requirement/code is less stringent.

0.6.2 DOCUMENTATION

All necessary certifications and/or documents covering the approval of, and indicating compliance with, applicable regulations shall be obtained by the CONTR and supplied to MaineDOT. Note the vessel name shall be: “George J. Mitchell”, Port of Documentation is Rockland, ME. CONTR shall complete and submit the Application for Initial Documentation (CG-1258) and the application for Official Number. When MaineDOT receives Bills of Sale and Builder’s Certificates, MaineDOT shall be responsible for obtaining the final Certificates of Documentation. Also reference MaineDOT Standard Specification Section 104.3.6 Project Records.

0.6.3 ACCESS TO DOCUMENTS

MaineDOT shall have ready access during normal working hours to all documentation concerning the vessel including, but not necessarily limited to: Drawings; Specifications; Technical Information; engineering calculations; Schedules; Test & Inspection Reports; Relevant Subcontract Documents; Regulatory Body Reports; Approvals; Recommendations; and the CONTR’s Detailed Contract Estimate. The CONTR’s Detailed Contract Estimate shall be viewed only in the presence of the CONTR’s representative, shall not be copied, and shall not be removed from the CONTR’s possession.

0.6.4 INSTRUCTION SHEETS & MANUALS

The CONTR shall provide MaineDOT with (1) complete electronic set of vendor instruction manuals, maintenance manuals, parts lists, and cut sheets for all equipment and machinery provided on a portable flash drive. A Manual Index shall be provided. Categories are groupings such as “Navigation Electronics”, “Pumps”, “Electrical Components”, etc. MaineDOT may at their option, request individual vendor instruction manuals, maintenance manuals, etc. at the time of purchase or installation.

0.6.5 DOCKING PLAN

The CONTR shall generate a Docking Plan in AutoCad format and submit in PDF to MaineDOT and Design Agent for review and approval. The approved plan shall be, in turn, provided to MaineDOT and Design Agent as “As-Built” in AutoCAD, PDF, and paper copy. The Docking Plan shall be approved prior to the vessel leaving the shipyard.

The Docking Plan shall include, but is not limited to, blocking, rudders, shafts, propellers, grid coolers, transducer locations, anode locations, sea chests, and tank boundaries.

0.6.6 PURCHASE ORDERS

The CONTR shall provide copies of purchase orders for equipment and machinery to the MaineDOT within 90 days of issued date. This file will give the Department future reference for ordering replacements, parts, etc. during the life of the vessel. Reference Standard Specifications Section 108.4 Payment for Materials Obtained and Stored.

0.6.7 CERTIFICATION

The vessel will be designed, constructed, and outfitted to meet the regulations of 46 CFR Subchapter “H” Passenger Vessels. Vessel shall be certified for “Lakes, Bays, and Sounds; Partially Protected Waters; Cold Water Service”.

The CONTR shall provide MaineDOT with the following Documentation (with exception of Officer’s USCG licenses). These documents shall be posted in (2) aluminum, Plexi-glass (or equivalent) window cases with hinged door(s) and lock provided and installed for this purpose and approved by the OCMI. Specific locations shall be to the approval of the OCMI and MaineDOT/MSFS.

1. Stability Letter (pilothouse)
2. Certificate of Documentation (pilothouse)
3. Regulatory and ITC Tonnage Certificate (pilothouse)
4. FCC Radio License (pilothouse)
3. Compass Deviation Card (pilothouse)
4. MARPOL placard (pilothouse)
5. Certificate of Sanitary Construction (pilothouse)
6. Fire Safety Instructions (passenger space, pilothouse, EOS)
7. Certificate of Inspection (passenger space)
8. USCG Officer’s Licenses (passenger space)
9. Emergency Evacuation Plan (passenger space)
10. Fire Safety Plan (passenger space)

The latest amendments to all laws, regulations, rules and conventions, which are in force at the time of Bid Opening, are to be considered as part of the CONTRACT. Any amendment to such requirements or any new laws, regulations, rules or conventions that come into force after Bid

Opening, shall be treated as a change to the CONTRACT if not otherwise covered by these Specifications.

0.6.8 SUBSEQUENT REGULATORY CHANGES

IF: CONTRACT changes are required by modifications or additions to the Laws or Regulations of the State of Maine, the United States, the Regulatory Agencies listed in 0.6.1, or any Governmental body or board thereafter organized or created;

AND: Such changes require an increase or decrease in the cost of the vessel;

THEN: It is agreed by the CONTR and MaineDOT to re-negotiate the CONTRACT PRICE and/or CONTRACT COMPLETION DATE in light of such changes.

Also reference Standard Specifications Section 109.8 – Changes – Contract Modification.

0.7 CONTRACT DESIGN DOCUMENTS

0.7.1 GENERAL

Responsibility for the USCG submittal is shared between the Owner's Design Agent, ABB, and the CONTR. The OWNER's Design Agent, Gilbert Associates, Inc., Braintree, MA, will submit the Contract Drawings to USCG/MSD for review, comments, and approval. ABB will submit the Contract Drawings to USCG/MSD for review, comment, and approval for their electrical and integration scope. Subsequent re-submittals to address comments on these documents will be accomplished by Gilbert Associates and ABB. Additional submittals will be required by CONTR or their suppliers to satisfy the full scope of review by the USCG Marine Safety Center and the local shipyard OCMI as well as the homeport OCMI. For CONTR initiated reviews, CONTR is responsible for submittal of all documentation and responding to all comments necessary to receive USCG approval. Upon receiving the drawings returned from USCG/MSD as approved, Gilbert Associates, ABB, and CONTR will forward the approved drawings to MaineDOT, Design Agent, the CONTR, and to the Local OCMI as may be directed by USCG MSD. Gilbert Associates, ABB, and CONTR will keep MaineDOT apprised of USCG comments and shall provide MaineDOT and the CONTR with copies of all USCG communications of "Approval", "Examined", and "Returned for Revision". USCG approvals prevail over MaineDOT approvals.

0.7.2 INTERFERENCES & ACCESSES

The elimination of all equipment interferences; and the location of machinery, pumps, piping, wiring, ductwork and misc. equipment; so that proper access for operation and maintenance can be readily achieved, is the CONTR's responsibility. CONTR shall check manufacturer's drawings prior to ordering equipment to ensure that final equipment selection does not cause unforeseen interferences. CONTR shall notify MaineDOT and Design Agent of any such

differences. It is essential that the CONTR is aware of these obligations. The CONTR is responsible to see that all installations are arranged and constructed using "good shipbuilding practice" and that they adhere to the requirements of the SPECIFICATIONS, CONTRACT, and the CFR. The CONTR is responsible for the maintenance of ongoing communications, inspections, and approvals during construction.

0.7.3 ENGINEERING

The CONTR shall be responsible to provide competent and professional construction engineering to construct the vessel. Construction details that are not shown on the Contract Plans and that may be required for fabrication and/or construction guidance (commonly referred to as "working drawings" or "yard sketches") shall be developed by the CONTR and shall be approved by MaineDOT, Gilbert Associates, and, if required, by the USCG/MS. Reference MaineDOT Standard Specification Section 105.7 Working Drawings

The CONTR shall provide sufficient shop drawings for review to MaineDOT prior to the construction of the specific area in question. All working drawings, shop drawings, blueprints, samples, working plans, progress photographs, progress reports, production schedules and other documentation shall be submitted to the OREP for review.

Within 30 days of Contract award, the CONTR shall designate an individual as the CONTR's Representative for this CONTRACT and shall notify MaineDOT of the individual's contact information. This individual shall serve as the contact person (POC) between MaineDOT and the CONTR in matters of engineering and design until another individual is so designated.

Notwithstanding any requirements of these SPECIFICATIONS, it shall be the CONTR's sole responsibility to determine and develop working drawings, which may be necessary to complete the construction and delivery of the vessel. Working drawings shall be made available for timely inspection, comments, and approval by MaineDOT.

When a CONTR is authorized to install a different (or equal) piece of equipment other than specified under the terms and conditions of Section 0.3.4 or 0.3.5, the CONTR shall be responsible to revise any and all drawings associated with the installation of this equipment. All revised or original design and engineering drawings submitted to MaineDOT by the CONTR for review shall be in both PDF and AutoCAD format. The AutoCAD version (release) used shall be mutually agreed upon by MaineDOT and CONTR.

CONTR shall maintain a set of up-to-date "As-Built" Contract Plans upon which shall be recorded accurately as the work progresses the actual dimensions and locations of all his work, indicating thereon all variations from the Contract Documents. The record shall include the work of all Subcontractors. Record drawings shall be reviewed by MaineDOT, and the CONTR shall make all necessary changes according to the Resident's review. Prior to final acceptance of the Work, all recorded data shall be transferred by the Contractor, to a complete set of reproducible record specifications of the Contract Drawings showing "As-Built" conditions. The As-Built

drawings shall be presented using neatly color-coded markups to identify changes, modifications, or deletions to the proposed work.

0.8 WEIGHT AND CENTER OF GRAVITY

0.8.1 WEIGHT ESTIMATE

The CONTR shall be responsible for maintaining the weight, VCG, and LCG characteristics for the vessel as construction progresses. Vessel modifications which affect the weight, VCG, and LCG shall not be undertaken until the CONTR has submitted to MaineDOT an estimate of the effect that such departures will have on the overall Weight Estimate. MaineDOT is responsible to provide the CONTR written approval for such departures.

The CONTR shall be responsible to track the vessel's weight by updating the Weight Estimate monthly throughout the construction process. Each updated Weight Estimate shall be provided to MaineDOT and DESIGN AGENT for review.

0.9 ACCESS & MAINTENANCE REQUIREMENTS

0.9.1 GENERAL

The arrangement of all machinery and equipment shall be designed, so far as possible, to permit ready access to all parts for operation, inspection, maintenance and repair without removal or disturbance of other structure or equipment. Ladders, doors, manholes, scuttles, bolted plates, etc. shall be provided as required for access.

In no case may grating/floor plate support, hangers, wireway supports or other miscellaneous structure be attached by welding to any equipment or machinery unless specifically approved by the respective manufacturer and by MaineDOT. Equipment such as switchboards, transformers, pumps, etc., shall not be welded to deck structure unless specifically approved as described above.

0.9.2 PIPES, VALVES, ETC.

Restriction of access openings by pipes, valves, wires, etc. is unacceptable. Pipes, ventilation ducts, controls, valves, etc., shall not be located in areas rendered inaccessible by the positioning of other fittings. All systems including piping, ductwork, hangers, etc., in way of areas designated as temporary access will be installed so that they may be readily removed without burning or cutting. Wireways shall not block temporary access areas. CONTR shall pay particular attention to the routing of pipes and wireways through tonnage deep floors, so that the lightening hole proximity requirements contained in USCG MTN 01-99 are not violated.

Where valves or other equipment that requires frequent attention are installed or relocated below floor plates, those floor plates or portions thereof shall be fitted with hinges so as to provide easy and safe access.

0.9.3 REMOVAL OF EQUIPMENT/MACHINERY

Main Generator Engine exhaust pipe runs, silencers, and lagging shall be installed with bolted flanges and reusable insulation blankets to facilitate efficient removal and replacement.

CONTR shall provide and install a minimum of 60 padeyes. Lift points shall be in convenient locations throughout the Engine Room, Auxiliary engine room, and propulsion motor/workshop space below deck and above the access stairway for handling the removal of machinery, motors and other equipment. CONTR shall propose specific locations to MaineDOT for approval before work commences.

0.9.4 DRAINAGE

In places where the lodgment of water or oil is unavoidable, adequate drainage shall be provided. Particular attention shall be paid to avoiding water lodgment along hull longitudinal frames, horizontal deck beams and stiffeners as well as drainage around joinery during construction and in the final condition. Flanges shall be located to face downwards wherever possible and where not possible shall be fitted with adequate limber holes for drainage.

0.9.5 LIGHTENING HOLES, MANWAYS, LIMBER HOLES

Lightening holes and manways in swash bulkheads, tanks, voids, double bottoms, tonnage bulkheads, etc., shall be arranged to facilitate physical inspection and maintenance access. Hand grabs shall be provided above at least one set of lightening holes in each deep floor to provide safe transition from space to space, on each side of deep floor. So far as practicable and within the criteria of tonnage regulations, all areas of tanks and voids shall be accessible. Limber holes shall be located so that liquid can drain freely to bilge or tank suction locations. No limber holes shall be smaller than ¾" radius, unless that diameter is greater than 50% of the web depth. Limber holes shall be provided as shown in bar keel to provide drainage across centerline. It is the CONTR's responsibility to see that the basic requirements of reasonable access and liquid drainage are met.

0.10 ACCESS TO YARD/VESSEL

0.10.1 ACCESS TO YARD/VESSEL

MaineDOT shall be afforded access to the CONTR's shipyard, the OREP's on-site office, and the vessel during YARD working hours, to include all shifts, through and until the vessel's departure for the OWNER's venue.

MaineDOT reserves the right, at no additional cost to the CONTR, to witness ALL work at any point in the performance of the CONTRACT and/or to audit and verify that the performance of

all work is in compliance with the documentation, policies, and procedures which are a part of this CONTRACT. And reference MaineDOT Standard Specification Section 104.2.Department’s General Authority and Responsibilities and Section 104.3.5 Duties Regarding Inspection of Work.

0.11 OFFICE

Reference Standard Spec Section 639 Engineering Facilities

Field Office Type B – remove 639.10 Method of Measurement and 639.11 Basis of Payment

The CONTR shall provide access and customary telephone, hi-speed internet access, e-mail, administrative and other facilities during normal working hours, or at other times by arrangement, to the Resident, all other representatives of the Department, regulatory authorities, surveyors, and to any other person for all necessary and reasonable purposes, to all premises where work under these presents is being carried out or components stored, including those of subcontractors.

0.11.1 MaineDOT OFFICE

The MaineDOT office shall meet the following minimum requirements:

Description	Quantity
Office area (minimum ft2)	125 per inspector
Drafting Table Surface (ft2)	35 “ “
Drafting stools-each	1 “ “
Office Desk	1 “ “
Ergonomic Swivel Chairs	1 “ “
Folding Chairs	2 per office
High-speed internet connection (ports) or wireless	1
Fluorescent Lighting of 100 foot-candles minimum for all work areas	2 per office
110 Volt 60 Cycle Electric Wall Outlets	3 “ “
Wall Closet	1
Waste Basket with trash bags	1 per office
Broom	1
Dustpan	1
Water Cooler	1

The CONTR will be responsible for disposing of trash and supplying commercially bottled water for the water cooler. CONTR shall supply cleaning materials for floor, surfaces, windows for the duration of the project.

MaineDOT has the option to reject any furniture or supplies provided to the inspector’s office, based on general poor condition.

CONTR shall provide parking spaces for the Inspector(s) in close proximity to the entrance to the MaineDOT office. Maintain the pathway between the parking area and the MaineDOT office so that it is free of obstacles, debris, snow and ice.

The facilities and all furnishings shall remain the property of the CONTR upon completion of the Contract. Payment for the facilities, heating, lighting, telephone installation, internet connection, basic monthly telephone and internet charges and all furnishings shall be incidental to the Contract.

Failure to comply with the above requirements will be considered denial of access to the work for the purpose of inspection. The Department will reject all work done when access for inspection is denied.

CONTR shall provide access to a nearby men's and women's (or unisex) restroom facility for the duration of the Contract. Restroom facility shall be kept in cleaned status by CONTR. If deemed unacceptable by Inspector(s), a lockable restroom shall be provided by CONTR for MaineDOT personnel only.

0.11.2 CONFERENCE AREA

Upon prior notice and specific reservation request, the CONTR shall make available a Conference Area, which provides adequate space for meeting with vendors, yard personnel, and MaineDOT employees or designated subcontractors.

0.11.3 PARKING

Convenient parking space will be provided for MaineDOT employees, and Technical Reps. A minimum of two designated parking spots shall be marked as reserved for this construction project.

0.12 INSPECTIONS – MaineDOT Standard Specification Sections 104 General Rights and Responsibilities and 106 Quality

0.12.1 GENERAL

All material, equipment, and workmanship relative to the construction of the Vessel and facilities shall be subject to inspection by the Department, the USCG, other regulatory bodies having jurisdiction or any governmental entity and all reasonable times during the performance of the work. MaineDOT will attend all inspections.

The MaineDOT shall inspect all material, equipment and workmanship as set forth in the Plans and Specifications to determine whether they conform to the contract. All material, equipment and workmanship rejected by the OREP shall be corrected, repaired, or replaced at the expense of the CONTR and to the satisfaction of the MaineDOT. The MaineDOT OREP will oversee and may inspect, examine, and test the work to be performed.

At all times and places where work is being carried out in accordance with the Contract, the CONTR shall have a responsible person to superintend the carrying out thereof (who may be an employee of the CONTR or a supplier or subcontractor responsible to the CONTR), and any directions given in writing to such person shall be deemed to have been given to the CONTR, except that where variation to this Contract is involved, the procedure laid down elsewhere in this Contract shall be observed.

MaineDOT shall promptly approve all work and material conforming to the requirements of this Specification and shall promptly reject all work and materials which do not conform. Such rejected work or material shall be marked and isolated until satisfactorily corrected.

0.12.2 SCHEDULING & ATTENDANCE

The CONTR is responsible for scheduling and presenting all completed work for Acceptance Inspections and for giving written (email sufficient) advance notice (normally one week) to MaineDOT, USCG, and other required inspection agencies that such work is complete, has been passed by the CONTR's Quality Control (QC) department, and is ready for inspection. MaineDOT, at their discretion, may request to see the CONTR's QC department documentation at any time during the project. Inspections shall, when possible, be scheduled and accomplished during normal workdays on the CONTR's day shift and shall not constitute a delay to the CONTR's production schedule. And reference MaineDOT Standard Specifications Section 104.2 Department's General Authority and Responsibilities and Section 104.3.5 Duties Regarding Inspection of Work. MaineDOT has the right to inspect the work at any time. Also reference MaineDOT Standard Specifications Section 106.1 Roles Regarding Quality.

The CONTR shall make formal requests for weekend and holiday work in a timely manner with MaineDOT. Formal requests must be made in writing a minimum of four days in advance. See MaineDOT Standard Specifications Section 107.3 Allowable Work Times. for applicable holiday schedule.

Failure of MaineDOT to attend an inspection does not constitute an acceptance of the work. Inspections by the Coast Guard or other agency do not eliminate these requirements for inspection and acceptance by MaineDOT.

0.12.3 COVERINGS

Prior to the application/installation of paint, deck covering, insulation, sheathing, joiner work, ceilings, etc., all structure and weld that is to be covered will be given final inspection and will be signed off by the MaineDOT.

MaineDOT has the right and option to require removal of any or all coverings for inspection in areas that have not been previously inspected and passed. Work areas are NOT to be covered or concealed until inspected and approved by MaineDOT.

0.12.4 RE-INSPECTIONS OF UNACCEPTABLE WORK

Any welding, burning, heat shrinking, etc. which is performed as rework, repair, or on change orders after an inspection has been completed, may require (at MaineDOT's option) the removal of any or all coverings for re-inspection of plate, welds, etc. An initial inspection in no way negates the requirement for re-inspection if an area is reworked in any manner. Reference MaineDOT Standard Specification Section 106.6. Acceptance and Section 106.8 Non-conforming Work.

0.12.5 COMPARTMENT COMPLETIONS

Tanks and voids, passenger spaces, work and machinery spaces shall be inspected and certified complete by the CONTR's Representative, and then MaineDOT. Machinery spaces shall include documented tests for all machinery and equipment. CONTR's documentation for machinery spaces shall be submitted to MaineDOT. A compartment shall not be considered accepted until the checklist is complete, deficiencies are corrected, and the CONTR have signed off on the space first and then MaineDOT reviews and signs after approval. The CONTR shall be responsible for developing the compartment checklist to the approval of MaineDOT before work commences. At this time, so far as is possible, the compartment shall be secured and no further work shall be conducted within the space unless approved by the mutual consent of the MaineDOT OREP and the CONTR.

The intent of the foregoing paragraph is to guarantee that MaineDOT will receive, at delivery, a fully operational vessel which is immediately capable of entering regular on-line service.

0.12.6 TANKS

Prior to the final closing of any tank, MaineDOT shall have inspected and signed off that:

- a) Structure and welding is complete and approved
- b) Air or hydro test has been passed and witnessed by the OCMI
- c) Filling and suction piping is complete and tested
- d) Vents, sounding tubes, striking plates, level indicators, and hi/low level alarms are properly installed and tested
- e) Coatings have been applied per the paint schedule and approved by MaineDOT.
- f) The tank is clean and free of all debris

0.12.7 PIPING – FLUSH TESTING

All hydraulic fluid, lube oil, and fuel piping systems shall be thoroughly cleaned and flushed of all foreign matter with the appropriate system medium or an approved substitute. Hydraulic and lube oil piping shall be "pickled" with samples lab tested.

Waste oil piping and suction piping must be pressure tested for leaks at 5 to 10 PSI depending upon the system component pressure ratings. All work shall be documented by the CONTR.

Piping shall be tested, signed off, and approved by the CONTR. After CONTR approval, MaineDOT will inspect and approve. The CONTR must determine the maximum permissible test pressure for each system component according to the applicable regulations. System flushing shall be conducted at the applicable system's maximum operating pressure and temperature, and at normal line velocity. Extreme care should be used to prevent over-pressurization of piping systems undergoing testing.

All systems shall be flushed for a period of one hour (or longer as required) to achieve and ensure system is thoroughly cleaned and flushed. Flushing shall be accomplished using a CONTR furnished pump to circulate appropriate medium and CONTR furnished filters to collect all contaminants.

Prior to flushing any system, proper care and attention must be given to systems that will require to be blocked off, removed or bypassed, due to in-line mechanisms, valves or machinery that may be capable of trapping debris or foreign matter. Any damage will be at the CONTR's expense.

Summary – Basic Test Procedure for Pressure Test Required Systems

- Fill system with appropriate medium
- Run system at maximum operating pressure and operating velocity for minimum of one hour
- Drain system and blow out with fresh air for 10 minutes
- Flush with clean oil
- Refill and secure system

0.12.8 FUEL LINE PRESSURE TESTING –GENERATOR ENGINES

- Engine fuel systems will be pressurized for a minimum of one hour and all piping, fittings, and hoses checked for leaks.

0.12.9 TESTING PROCEDURE

- Pressurize system to 150% of normal operating pressure (CONTR shall supply pump, fittings, and gauges).
- Keep system under specified pressure for a minimum of one hour.
- Check all piping, fittings, hoses, and piping in areas of pipe mounts for leaks.
- Acceptable leakage: None
- Secure system, bleed air, and return to operational status.

0.12.10 VENDOR SITE VISITS

At the request of MaineDOT, the CONTR shall make arrangements for MaineDOT and/or other MaineDOT designated personnel to visit vendor's or sub-contractor's sites to witness equipment tests, inspect facilities, etc.

0.13 MATERIALS AND WORKMANSHIP – MaineDOT Standard Specifications Section 106 Quality

0.13.1 MATERIAL – GENERAL

Material, unless otherwise specified herein, shall be of commercial quality; suitable for marine environment; and shall conform to ASTM, SAE, ABS or DNV, and USCG (CFR) requirements. This material shall be so designated on Bills of Material and on Construction Drawings. All materials shall be new and of first class quality. All materials shall be free from imperfections of manufacture and from defects, which adversely affect appearance or serviceability.

All steel used for construction of hull, superstructure, and deckhouses, including forgings, shall be of open hearth mild steel, of uniform quality, the chemical and physical properties of which shall conform to the requirements of the American Bureau of Shipping for Grade A steel or ASTM A-36 certified steel.

0.13.2 WORKMANSHIP AND MATERIALS - GENERAL

All workmanship and materials shall be to the highest commercial standard, in compliance with MaineDOT, USCG, ABS, and AWS Standards.

0.13.3 STORAGE/PROTECTION – MaineDOT Standard Specification Section 106.3.4 Storage and 106.3.5 Handling and Section 106.3.6 Unacceptable Materials

All material and equipment intended for the vessel in any form, whether CONTR or OFE, shall be adequately stored and protected from the elements and shall be given appropriate security by the CONTR. Due consideration shall be given to the nature of particular equipment or material with storage and security mutually agreed upon by CONTR and MaineDOT. Inside storage shall be provided for all equipment and material that will be located on the interior of the vessel and for equipment such as radar antennas, floodlights, spotlights, etc. that could be sensitive to damage.

The CONTR shall be responsible during construction and prior to vessel delivery for the protection of all items with finished surfaces, such as joiner panels, door frames, deck coverings, carpeting, joiner ceilings, countertops, furniture, etc.

Any soft material areas, such as (but not limited to) upholstery and carpeting, damaged by the CONTR or CONTR's Agents during course of this Contract, will be replaced at the CONTR's expense.

Special coordination of delivery and storage of Energy Storage System elements is required (See 313.1.1 ENERGY STORAGE SYSTEM (ESS)).

0.13.4 WELDING

Welding shall be completed in accordance with AWS D1.1 and/or ASME Section IX and in compliance with standards and requirements established by ABS, USCG, CFR 46 or other applicable Class Society requirements.

All welding under this contract by CONTR shall be done only by welders who have successfully passed qualification tests accepted by the American Bureau of Shipping or other regulatory agency acceptable to ABS. The CONTR shall bear the expense of conducting these tests and shall certify by name to MaineDOT welders who have successfully passed the prescribed tests and hold current, valid certifications. The list of certified welders shall be submitted to MaineDOT for approval. The list shall include the employee's name, photo ID, welder identification stencil or stamp, certification(s), and date(s) of the most recent tests for each certification(s).

The CONTR shall require any welder to repeat these tests when, in the opinion of MaineDOT, the work of the welder indicates a reasonable doubt of their proficiency. In such cases the welder shall be re-certified as above if they successfully pass the retest; otherwise, they shall be disqualified until they have successfully passed the retest.

The CONTR shall maintain records of the individual welder's certification during the course of the Contract. The records shall be available for examination upon request of the MaineDOT.

CONTR shall establish and maintain a material and welding consumable control system to be approved by MaineDOT.

The CONTR shall submit a Welding Procedure Specification and a welding schedule to the MaineDOT for review prior to the start of construction. The welding sequence shall be designed to minimize distortion and locked-in stresses.

All welding shall be overseen by a CWI or equivalent as part of the CONTR's expense and QC plan. WPS, PQR's, WPQR's and certification having a reviewed stamp by USCG or ABS shall be submitted to the MaineDOT Fabrication Engineer for review. Non-destructive testing (NDT) shall be performed to ABS guidelines. CONTR shall submit the NDT plan to MaineDOT for approval. Additional testing may be required by MaineDOT based on the NDT results.

All welding equipment used on the work shall be of a modern type subject to close control. The electrodes used throughout the work shall be suitable for use with the parent metal at each weld and shall be approved by ABS.

Welding machine power sources shall be calibrated and maintained in accordance with manufacture or certification standards whichever is more frequent. At a minimum, CONTR shall calibrate welding machines on an annual basis and provide the required documentation.

Welding procedures, as to direction, length, numbers, and sequence of beads, shall be carefully planned to minimize lock-up stresses. Care shall be exercised to produce smooth even beads, especially on all exposed plating and fittings.

The CONTR shall employ appropriate welding procedures and grounding connections to preclude the possibility of anodic erosion of the hull after launching.

A detailed description of all welding procedures being employed in the construction shall be available to the MaineDOT.

Welding shall be of electric pulse arc Metal Inert Gas “MIG”, Tungsten Inert Gas “TIG”, or Shielded Metal Arc type process, as appropriate.

Pipe welding shall be accomplished using GTAW process for the root, fill and cap or a combination of GTAW and SMAW unless otherwise approved by MaineDOT. CONTR shall accomplish pipe welding using consumable back rings for open root pipe joints. Consumable backing rings are to be Robvon type or an approved equal. CONTR shall accomplish welding of pipe socket welds using consumable socket weld contraction rings. Consumable contraction rings are to be GAL gage type or an approved equal.

Intermittent welding will not be permitted in the oily water tank, the waste oil tank, Engine Room, and steering gear bilges (structure below the floor plate level, Deck House boundary bulkheads), and similar spaces where intermittent welding would result in corrosion to the weld ends or edges of attached members. Welding in fuel and lube oil tanks shall be continuous.

Welding in areas exposed to the weather or conditions that may lead to corrosion of faying surfaces, shall be CONTINUOUS OR shall be sealed between fillet welds with an applied fillet of paintable marine grade polyurethane or EPOXY-BASED caulking. Areas where caulking shall be applied include bulwarks, curtain plates, exterior Nav/Bridge Deck/Engine Room access alcove, Nav/Bridge Deck access stairs, Passenger Shelters, exposed portions of the three passenger lounges and Pilothouse top and visor.

Vertical welds, when necessary, shall be accomplished using up hand progression.

Wrap fillet welds around the end of members to eliminate stress risers and corrosion points.

Weldments shall be clean, unpainted, and free of slag prior to any non-destructive inspection or leak test required by this Specification.

Intermittent fillet welded tee joints shall have matched welds at the ends per ABS Rules, but in no case less than one-eighth the length of the member. Intermittent spacing shall be laid in between the end welds. Fillet welds in way of end connections, weld ends of structural shapes, chocks, and brackets shall be wrapped and sealed off.

Remove welds of poor quality, including cracked or cold tack welds, by chipping or grinding. Chip out and repair cold starts, weld cracks, crater cracks, and substandard defects to the satisfaction of MaineDOT.

Welds not passing visual inspection shall be repaired as required by these SPECIFICATIONS.

0.14 CONTRACTOR'S OBLIGATION and 104.3 Contractor's General Authority and Responsibilities

The CONTR is responsible to carefully review the Specifications and Contract Drawings. An item of work or equipment that is shown on the Drawings but omitted in the Specifications, or vice versa, shall be provided by the CONTR without a cost increase as though the item had been detailed or required in both documents.

The CONTR shall provide all, but not limited to, plant infrastructure, labor, and transportation for shipyard employees, supplies as required, fuel for vehicles and machinery, water, power, lighting, air, steam, crane and forklift services, CONTR communications, line handling, wharfage, towing and shifting services. This obligation shall include equipment and power services to prevent cold weather freeze up, as well as adequate hot weather ventilation. This obligation shall also encompass all requirements of the vessel delivery as detailed in Section 983.

0.15 HULL AND STRUCTURE PROTECTION

0.15.1 WELDING

Rigid Control of welding and grounding shall be maintained for the protection of hull and hull appendages. Care shall be taken that the welding polarity and ground connections of welding machines used on this vessel, other vessels in the immediate vicinity, or on the dock to which the vessel is moored shall be such as not to damage any parts of the vessel. The CONTR shall ensure that all Control system and sensitive electronics have been electrically isolated as per the manufacturer's requirements prior to any welding taking place.

0.15.2 UNDERWATER HULL INSPECTION (AS APPLICABLE)

If at any time prior to the MaineDOT's acceptance of the vessel, there is reason to believe that the underwater portion of the vessel may have been damaged, that coatings may have failed, or that equipment or appendages require out of water maintenance due to the CONTR's or a Sub-contractor's negligence or due to an evolution conducted in good faith by the CONTR but resulting in damage, the CONTR shall contract for an independent certified diver's inspection of the underwater hull.

A copy of the diver's inspection report shall be provided to the MaineDOT and USCG OCMI. In consideration of this report, the circumstances surrounding the damage, and the extent of damage which determine the damage to be a "warranted reason", the CONTR shall "haul out" (drydock) the vessel and adequately repair, clean and paint the damaged areas at the CONTR's expense. A protest by MaineDOT filed with the USCG Local OCMI and sustained by them, shall be deemed a "warranted reason" for requesting dry-docking.

If said Underwater Inspection is requested by MaineDOT, yet deemed unnecessary by CONTR, the cost of inspection will be borne by MaineDOT if the inspection report finds no discrepancies.

If warranted discrepancies are found, the cost of inspection, as well as the cost of haul out (drydocking) and the cost of repairs, shall be borne by CONTR.

0.16 OPERATOR'S MANUAL

The CONTR shall provide MaineDOT with an integrated Operator's Manual for the vessel. The manual shall be customized for the vessel and formatted in a consistent manner throughout. The operating manual must be available to, and written in a manner that is easily understood by, the units operating personnel with a table of contents and general index.

The operating manual shall contain a log of pages preceding the table of contents and general index that list all sections, their page numbers and OCMI review and approval date

The operators manual shall contain all required items listed in 46 CFR Chapter I, Subchapter I-A, Part 109 Subpart A §109.121.

The operators manual shall contain within it sections for the normal alignment, startup and shutdown of all main, auxiliary, and electrical equipment in a step-by-step format.

Specific sections shall be provided for operator response to blackout with and without generators, automation system cold startup, and all battery alarms and fault conditions. Failure modes described in the FMEA shall be grouped by required operator response and described in the manual in plain language along with the recommended response action. For each system, the manual shall include normal operating pressures, temperatures, and alarm setpoints, as well as trouble shooting procedures for systems operating outside normal conditions. Schematics for each system shall be provided with equipment, valves, and control places clearly labeled and referenced in the written procedures. The manual shall also include a list of spare parts with clearly identifiable part numbers needed to perform the preventative maintenance and failure response tasks described in the manual.

A diagram for each system shall be provided to guide the operator in normal alignment. All valves within each piping system shall be assigned a three place sequential numbering system preceded by the appropriate letter abbreviation for that system and referenced in the written procedures. The valve label shall also include its abbreviated function description within its system, e.g., Fire Main Cutout Valve No. 3, FM COV - 003

All valves and valve labels shall be color coded per industry standard guidelines and section 500.2 of this bid specification.

For each system the manual shall include normal operating pressures, temperatures, alarm setpoints as well as trouble shooting procedures for systems operating outside normal conditions.

The operators manual shall contain within it specific sections for engineering casualty control procedures that guide the operator in step by step responses and restoration for but not limited to blackout with and without generators; automation system cold startup and all battery alarms and fault conditions; loss of steering and loss of main propulsion.

The casualty control procedures shall also include recommended response for a thermal runaway event in the ESS.

Failure modes described in the FMEA shall be grouped by required operator response and described in the manual in plain language along with the recommended response action.

The manual shall also include a list of spare parts with clearly identifiable part numbers needed to perform preventative maintenance.

The CONTR and integrator are responsible for revisions due to any equipment or configuration changes.

The CONTR shall submit a draft copy of the operators manual prior to delivery and acceptance of the vessel to MaineDOT and OCMI for review and approval. The Operators manual shall be ready to use during commissioning and crew familiarization.

(3) copies of the Operator's Manual shall be provided in 3-ring binders and (2) copies in electronic flash drive format and (1) copy in the project online database. (1) Copy in electronic file format, able to be edited for future revisions."

The CONTR and integrator are responsible for revisions due to any equipment or configuration changes.

0.17 SPARES

The following list shall serve as a Reference to the SPECIFICATION requirements for spare equipment and components. The CONTR shall include all requirements for spares in their bid proposal.

1. Shaft Line and Propeller Components Section 242.1.1
2. Generator Sections 311.1.1, 311.2.1, 311.3.1
3. Electrical Section 324.1.4
4. Lamps (Lighting) Section 331.1.14
5. Steering System Section 561.0.1
6. Wheelchair Lift Section 585.0.2.4

SWBS SPECIFICATIONS

The following Technical Specifications are arranged by Ship Work Breakdown Structure (SWBS) numbers in Sections:

- 100 Vessel Structure
- 200 Mechanical/Propulsion
- 300 Electrical

- 400 Alarms, Internal Communications, Navigation/Command and Surveillance/Electronics
- 500 Insulation, HVAC, Piping, Fire Detection & Suppression/Auxiliary Systems
- 600 Markings, Access, Vessel Protection/Outfit
- 800 Integration Engineering
- 900 Tests & Trials, Services/Delivery

SWBS SECTION 100 VESSEL STRUCTURE

The following specifications and drawings referenced provide for the Construction of Hull, Superstructure and Deckhouse Structures required to be performed under this contract:

- 100.1 REFERENCE DRAWINGS
- 100.2 GENERAL SCOPE
- 110.1 HULL
- 123.1 TANKS
- 130.1 DECKS, FRAMING
- 150.1 SUPERSTRUCTURE
- 150.2 GENERATOR, PROPULSION MACHINERY, AND SWITCHBOARD FOUNDATIONS
- 167.1 WATERTIGHT HATCHES & SCUTTLES
- 168.1 WEATHERTIGHT DOORS
- 171.1 MASTS
- 119.1 FIXED BALLAST

100.1 REFERENCE DRAWINGS

D372-A1	GENERAL ARRANGEMENTS
D372-A2	INBOARD PROFILE
D372-A3	OUTBOARD PROFILE
D372-A12	BULWARK & MOORING ARRGTs & DETAILS
D372-S1	STRUCTURAL PROFILE
D372-S2	CONSTRUCTION SECTIONS ABOVE MAIN DECK
D372-S3	CONSTRUCTION SECTIONS BELOW MAIN DECK
D372-S4	LONGITUDINAL BULKHEADS BELOW MAIN DECK
D372-S5	TRANSVERSE & LONGITUDINAL BHDS ABOVE MAIN DECK
D372-S6	SHELL EXPANSION
D372-S7	DECK SCANTLINGS
D372-S12	RAILINGS, LADDERS AND STAIRWAY DETAILS & ARRANGEMENTS

100.2 GENERAL SCOPE

The vessel is to be constructed in accordance with the Contract Drawings and Specifications submitted as an integral part of the Contract. These documents have been developed by MaineDOT's Design Agent, Gilbert Associates, Inc. of Braintree, MA.

100.2.1 SUPERSTRUCTURE/ACCOMMODATIONS

The Superstructure shall comprise:

- PILOTHOUSE-DECK: Pilothouse, stack.
- 02-DECK: EDG installation, crew head, open deck passenger seating, stair trunk, stack, IBAs (with deck mounted cleat to tie off sea painter lines after launch), rescue boat, rescue boat davit, navigation masts, wheelchair lift starboard, and rapid charging receptacle.
- 01-DECK: Passenger cabins P&S, wheelchair lift starboard, exhaust uptakes, passenger heads P&S, lockers for supplies and PFDs.
- MAIN DECK: Exhaust uptakes P&S, ER air supply P&S, Aux ER air supply/exhaust P&S, Crew Workshop air supply/exhaust P&S, deck lockers port and starboard, service trunks P/S, wheelchair lift starboard, and hull access stairtrunks P&S.

The Main Deck, Starboard 01-Deck, and 02-Deck are serviced by a wheelchair lift located on the starboard side.

100.2.3 CLASSIFICATION

The vessel shall conform to all of the regulations that apply to a 46 CFR Subchapter "H" Passenger Vessel with a Gross Regulatory Tonnage not to exceed 500 GT. The vessel will not be classed; however, it shall be constructed in compliance with ABS Rules for Building and Classing Marine Vessels July 2023 and ABS Rules for Steel Vessels Under 200 feet, as applicable and shall, in all respects, be constructed and outfitted according to good shipbuilding practices.

110.1 HULL

110.1.1 MATERIALS AND DESIGN

The Contract design is a welded steel, double-ended, hybrid diesel electric powered vessel. The vehicle deck extends from bow to stern. A steel bar rub rail guard surrounds the entire perimeter at the main deck edge.

123.1 TANKS

Tanks are supported by surrounding bulkhead / deck structure and not integral with the shell plating. Fuel Oil (Ref: Section 261.1), Potable Water, Lube Oil, Bilge Slops, Sewage, Dirty Oil,

and Emergency Generator Fuel tanks provide capacities as listed in this Section and Section 0.4.3.

123.1.1 POTABLE WATER TANK

The design incorporates (1) 4500 gallon Potable Water tank located at FR 74-FR 78. This tank shall be fitted with piping, valves, and fittings in accordance with Contract DWG D372-P5. Tank shall have non-tight centerline swash bulkhead. The tank serves a dual purpose as the water mist supply tank as well as the potable water supply for house services. The piping for the tank shall be such that 3000 gallons are accessible for house loads, while a reserve 1500 gallons is below the level of the supply for the house services. The supply piping for the mist pump will be from near the bottom of the tank. The potable water tank is to be constructed of 316 L stainless steel bulkheads, stiffeners, and fittings per the plan drawings.

123.1.2 FUEL OIL TANKS

The design incorporates two (2) 2500 gallon Fuel Oil tanks at 100% capacity. They are located centerline FR16-FR 19 and FR 83-FR 86. This tank shall be fitted with piping, valves, and fittings in accordance with Contract DWG D372-P4. Tanks shall have non-tight centerline longitudinal swash bulkheads.

123.1.3 LUBE OIL TANK

The design incorporates (1) 500 gallon Lube Oil tank located to port in the auxiliary engine room FR62-FR64. This tank shall be fitted with piping, valves, and fittings in accordance with the Contract DWG D372-P11.

123.1.4 BILGE SLOPS TANK

The design incorporates (1) 500 gallon Bilge Slops tank located to starboard FR19-FR21. It shares a boundary with the forward fuel oil tank. This tank shall be fitted with piping valves, and fittings in accordance with Contract DWG D372-P11.

123.1.5 DIRTY OIL TANK

The design incorporates (1) 500 gallon Dirty Oil tank located to port FR 19-21. It shares a boundary with the forward fuel oil tank. This tank shall be fitted with piping, valves, and fittings in accordance with the Contract DWG D372-P11.

123.1.6 SEWAGE TANK + LIFT TANK

The design incorporates (1) 3000 gallon plastic Sewage tank supplied by Miller Plastic Products, Inc., or approved equal located on centerline FR24-FR27. This tank shall be fitted with piping, valves, and fittings in accordance with the Contract DWG D372-P6. Adequate supports shall be provided to suit the final dimensions and attachments points from the manufacturer.

The design incorporates (1) 70 gallon (approx.) lift tank located below crew head. Liberty Pumps 700 Series ½ hp 208V Sewage Ejector Tank Unit, or approved equal shall be fitted with pump, piping, valves, and fittings in accordance with Contract DWG D372-P6, as well as vent in accordance with Contract DWG D372-P12.

123.1.7 EMERGENCY GENERATOR FUEL OIL TANK

The design incorporates one (1) 120 gallon Emergency Generator Fuel Oil tank at 100% capacity. It is located in the Emergency Generator Room on the 02 Deck. This tank shall be fitted with piping, valves, and fittings in accordance with Contract DWG D372-P4 including overflow sensor and emergency cut-off. Emergency Generator Fuel Oil tank sight glass shall be visible from the door entry to the space.

123.1.8 EMERGENCY BATTERY RUN-OFF WATER RETENTION TANKS

The design incorporates two (2) 2100 gallon Emergency Battery Run-Off Water Retention tanks. The area under each battery room flat is dedicated to this purpose and shall be made WT to the hull for the length of each battery room. Suction would be accomplished via independent waste management vacuum truck through a dedicated BWTMH in the battery room flat. Wiring and Piping for other systems shall not be run underneath of the battery rooms through these tanks.

130.1 HULL STRUCTURE

130.1.1 DESIGN and CONSTRUCTION

The CONTR shall use the Contract Drawings and Vendor Drawings, as appropriate, for guidance. Where required, the CONTR shall be responsible for developing construction working drawings.

All hull plating shall be of steel, the thicknesses and extents as shown on the Contract Drawings. Hull shall be framed with steel transverse bulkheads, transverse deep floors, and transverse floors with flanged plate bottom and side frames. Additionally, longitudinal intercostal or equivalent flat bar frames shall be fitted on bottom and side shell between transverses. The arrangement of intercostals and equivalent construction shall be as required by USCG MTN 01-99 “Tonnage Technical Policy”, current edition. Main Deck shall be framed as shown on the Contract Drawings, with transverse web frames where shown, and with longitudinal angle frames intercostal to transverse deep floors and transverse bulkheads.

Arrangement of deep floors, lightening holes, and miscellaneous openings in deep floors shall be as shown on the Contract Plans and according to USCG MTN 01-99, current edition. Stiffeners to correct deflections in decks and bulkheads to be added as needed per ABS guidelines and MaineDOT guidance.

150.1 SUPERSTRUCTURE AND DECKHOUSE STRUCTURE

The CONTR shall use the Contract Drawings and Vendor Drawings, as appropriate, for guidance. Where required, the CONTR shall be responsible for developing construction working drawings.

The superstructure and deckhouse plating shall be steel, the thicknesses and extents as shown on the Contract Drawings. The superstructure and deckhouses shall generally be framed transversely, with steel flanged plates and angles, as shown on the Contract Drawings, supported by transverse and longitudinal bulkheads. Main deck bulkhead structures shall have drain snipes cut into corners to prevent water collection. On exposed exterior structure, CONTR shall install caulking between intermittent welds on panels to avoid rust bleed.

150.2 GENERATOR, PROPULSION MACHINERY, AND SWITCHBOARD FOUNDATIONS

Generator foundations shall be as shown on the Contract DWG D372-S9-1. Propulsion Motor and Reduction Gear foundations shall be generally as shown on the Contract DWG D372-S9, adjusted for final rail and resilient mount arrangement by manufacturer.

Major Equipment foundations shall be formed of heavy plate, the thicknesses and extents as shown on the Contract Drawings. Heavy top plate rider bars shall be fitted as shown. Longitudinal skid foundations shall be fitted with transverse flanged plate brackets, as shown on the Contract Drawings.

Propulsion motor foundations shall generally consist of angles and plate, suitably secured to hull frames and with top bars of suitable size for attachment of the equipment. Where drip pans are needed, they may be formed of flanged plates with welded corners and acting as part of the foundation. All foundations shall be braced to prevent vibration. Floor plates may be extended to form part of the foundations.

Switchboard foundations shall be fabricated of box tube or steel angle to suit the bottom entry switchboard access points and cross rails. The pre-fabricated foundation skids shall attach to the transverse bottom frames to provide robust, level support, while adding protective measures to the dedicated wire/cable routed beneath the switchboards. Fluid piping shall not bisect the switchboard foundation skids. Water and oil piping shall not be located directly adjacent to the switchboards except to provide cooling water per the Contract Drawings. The foundation skid height shall be 1" higher than the engine room flat per IEEE45.7 section 5.3.

167.1 WATERTIGHT HATCHES & SCUTTLES

167.1.1 GENERAL

The CONTR shall provide and install flush mounted, steel, watertight hatches in the Main Deck accessing all hull spaces P&S and in the Hold Deck void and machinery spaces as shown on the Contract DWGS. Access to voids not accessed by stairways shall be via hatches and vertical ladders installed with bolts. At the direction of the MaineDOT, the CONTR shall add lifting gear to the bolt-in hatches aboard the vessel. Lifting gear is made from a pipe end cap with a single horizontal round bar for a strap. Hatches shall be by Freeman Marine, Model 2481, or approved equal (Ref. D372-A7). See Section 623.1.1 for drip tray requirement below main deck hatches. The center travel lane located hatches shall have weld clips. Hatches shall include escape handles FRE 0031-2064, or approved equal on the interior side of hatch to allow escape.

The CONTR shall provide (2) two portable fiberglass safety gratings to set into open hatches when personnel are working within a space with the hatch cover removed or hinged open.

167.1.2 SOFT PATCH

The CONTR shall provide and install flush-mounted watertight soft patch to provide access to Hold Deck Engineer's Workshop FR33-FR36, Engine Room FR48-FR 51, and Auxiliary Engine Room FR66-FR69 on centerline as shown on the Contract DWGS. Cable routing should be avoided in way of soft patches. Any piping that crosses a soft patch requires take down joints at each side P/S. Pad eyes for lifting equipment shall be placed nearby soft patch to facilitate movement of heavy equipment.

168.1 WEATHER-TIGHT DOORS

The CONTR shall provide and install Main Deck and Upper Deck weather-tight doors. Doors shall be by Fabtek, Dean Steel, Pacific Coast Marine, Beclawat, Freeman Marine, or approved equal, and shall address accesses as shown on Dwg. D372-A7-1&2. Doors opening against bulkheads shall be fitted with rubber bumpers. Doors accessible by passengers shall be fitted with hinge-end finger guards. Also see Section 611.1.1. All weather facing doors, frames and hardware to be 316 stainless steel and powder coated to match exterior of vessel. Doors shall be protected from all other construction activity to prevent damage or contamination to surface. Weathertight doors shall have NGP 896 ADA Compliant Bumper Seal Thresholds where designated by the MaineDOT to prevent the ingress of water.

171.1 MASTS

The CONTR shall provide and install appropriate masts and foundations to mount radar antennas, required navigational lights, miscellaneous antennas, flags, and day shapes in accordance with the Contract DWGS (Ref: D372-A3 and A8).

- A mast shall be located on the Pilothouse top for navigation lights, flag hoists and day shapes. Mast shall be fitted with ladder rungs, as shown, and transverse yardarm for flag hoists, day shapes, and anemometer. (Ref. D372-A8)

- Two (2) masts shall support radar antennas on the Pilothouse top.
- Two (2) 1-1/2" SCH 40, 4'-6" high bow pennant staffs shall be located on the Main Deck bulwark cap at FR 3.5 & FR 98.5. Each is to be fitted with hardware and halyards to accommodate a "Steering Pennant". Locate pennant staff on the starboard side forward and port side aft. Mount flag halyard cleats near staff easily accessible by crew.
- A mast located on the 02-deck, starboard FR72 shall be fitted with hardware and halyards to accommodate the ensign.
- Two (2) stern/anchor light masts shall be located on the Main Deck bulwark cap at FR 3.5 & FR 98.5 in accordance with Contract DWG D372-A8. Locate mast on the port side forward and starboard side aft.
- Two (2) navigation light masts shall be located on the 02 deck in accordance with Contract DWG D372-A8. Locate mast on the Starboard side above the forward cabin bulkhead (near FR 31) and above the aft cabin bulkhead (near FR 71) both centered at 8'-4" off centerline.
- A mast located on the pilothouse top, port side, shall support satellite compass.

191.1 FIXED BALLAST

The CONTR shall provide and install fixed heeling ballast in the hold, on starboard side, between FR36-FR40 and also FR62-FR66, on a raised steel flat (Ref: D372-S3). Ballast shall consist of 20 long tons of lead ingot fixed in place by concrete. Ballast shall be secured to steel flat using steel reinforcing bars welded in place before concrete is poured. Final ballast quantity will be determined by DESIGN AGENT prior to installation.

SWBS SECTION 200 MECHANICAL

The following specifications and drawings referenced provide for the Mechanical Installations required to be performed under this contract:

- 200.1 REFERENCE DRAWINGS
- 233.1 PROPULSION – PROPULSION MOTORS
- 241.1 REDUCTION GEARS
- 242.1 COUPLINGS, SHAFTING, SEALS
- 252.1 PROPULSION CONTROLS SYSTEM
- 259.1 EXHAUST SYSTEMS
- 261.1 FUEL OIL SYSTEM
- 262.1 LUBE OIL SYSTEM
- 263.1 DIRTY OIL SYSTEM

200.1 REFERENCE DRAWINGS

D372-M1	PROPELLER SHAFT ARRGTs AND DETAILS
D372-M2	RUDDER & STEERING ARRGT & DETAILS
D372-M4	ANCHOR HANDLING ARRGTs
D372-M5	RESCUE BOAT & DAVIT DETAILS
D372-M7	ENGINE ROOM VENTILATION PLAN
D372-M9	HVAC SYSTEM ARRGTs & DETAILS
D372-M10	KEEL COOLER ARRANGEMENTS & DETAILS
D372-P1	EXHAUST ARRGT & DETAILS
D372-P4	FUEL OIL PIPING SCHEMATIC
D372-P11	LUBE OIL & WASTE OIL PIPING SCHEMATIC
D372-P14	KEEL COOLER PIPING SCHEMATIC
D372-P15	HVAC BOILER WATER PIPE SCHEMATIC

233.1 PROPULSION – PROPULSION MOTORS

233.1.1 GENERAL

Main propulsion machinery shall be provided and installed in accordance with USCG requirements and ABS Classification Society standards.

The CONTR shall maintain communication throughout the construction process with vendors who are providing engines, motors, gears, couplings, shafting, seals, bearings, etc., to make sure that all parties are in mutual agreement and that the provided components of the propulsion system are fully compatible. MaineDOT shall reserve the right to be copied on all electronic and written communication between the CONTR and vendors and between the CONTR and USCG concerning the installation of the Propulsion System.

The CONTR shall be responsible for aligning all drive line components installed to the Manufacturer's requirements. Alignments shall be performed in the presence of the propulsion motor's Tech Rep and shall be approved by this representative. Documentation shall be submitted to MaineDOT. Final alignments shall take place after floating the vessel and prior to motor start-up and Dock Trials. Alignment procedures shall be presented to MaineDOT and the Propulsion Motor and Reduction Gear's Tech Reps prior to the completion of shaft line component installations.

233.1.2 MAIN PROPULSION MOTORS

The propulsion motors and associated equipment shall be quoted and provided as part of the integrated power and propulsion system by ABB. The (2) Main Propulsion Permanent Magnet Motors shall be Ramme UW860-M-950-1800-600. Each motor shall be rated for 950 kW at 1800 RPM, 600 V, liquid cooled. Motors and associated equipment shall be installed by CONTR according to ABB Integrator Manual and according to manufacturer recommendations. Motors are mounted per Contract DWG D372-S9 and DWG D372-M1, located on centerline at approximately FR 33 & FR 69. (See ABB specifications for additional requirements/details)

241.1 REDUCTION GEARS

The CONTR shall provide and install Reintjes Model LF550 5.14:1 vertical offset gears. Gears shall be free-standing, liquid cooled, and capable of withstanding 30,000 lb thrust at 350 RPM on a 7" diameter shaft each. Reduction gears are mounted per Contract DWG D372-S9 and DWG D372-M1, located on centerline at approximately FR 30 & FR 72. Gears shall be provided by Karl Senner, Inc.

Each reduction gear shall be supplied with:

- Remote heat exchanger
- Main oil pump with duplex filters and cooler
- Shaft Brake
- Clutch Assembly
- 24 VDC Shift Control Valve

- Pipe and Piping connections to liquid-cooling circuit
- Pressure and Temperature sensors
- Rigid Mounting Brackets
- Propeller Shaft Output companion flange
- Propulsion Motor Output companion flange
- Oil sump drain hose, valve, and quick disconnect
- Reintjes standard automation for unattended engine room
- Parts & Service Manuals (3 sets)
- Factory endorsed commissioning, startup, and sea trials

242.1 COUPLINGS, SHAFTING, SEALS, PROPELLERS

The CONTR shall provide and install all required couplings, stern tubes, struts, shafting, propellers, seals, bearings, and foundations, in accordance with the Contract DWGS to make complete driveline installation.

CONTR shall install Reintjes companions flange shaft couplings that are provided as part of the reduction gear package and in accordance with Reintjes design and installation instructions.

CONTR shall provide and install line shafts and tail shafts. Line shafts and tail shafts shall be 7" diameter stainless steel Aqualoy 22, or approved equal, and shall be of American raw materials, fitted with machined tapers and keyways as shown on the Contract DWGS.

CONTR shall provide and install stuffing box, stern and strut tube bearings and stuffing boxes for forward and aft shaft line assemblies as shown on the Contract DWG D372-M1. CONTR shall provide and install Thordon TG-100R shaft seal Size #4A with the water inlet located at 3 o'clock. Shaft seals are to be vented above the main deck. See DWG D372-P-14 for cooling water connections.

CONTR shall provide and install Kahlenberg "muff" couplings between line shafts and tail shafts (Kahlenberg DWG 3-5532 Rev A).

CONTR shall provide and install Vulkan couplings or approved equal between line shafts per Contract DWG D372-M1.

CONTR shall provide and install propellers by Sound Propeller Services, Seattle, WA: 5 bladed, 74" Diameter, Pitched 58" or per final vendor recommendations, DAR 0.76, CF3 stainless steel with 7" bore, Style Sound B, both RH. The CONTR is to verify the propeller characteristics with the propeller vendor and shall provide the MaineDOT OREP and DESIGN AGENT with the vendor's written verification response. Propellers shall be arranged to be outboard turning,

i.e., the starboard propeller will rotate clockwise when looking from aft of propeller, and port propeller will rotate clockwise when looking from aft of propeller.

242.1.1 SPARE SHAFT LINE COMPONENTS

- (1) Tail Shaft, 7" diameter, Aqualoy 22 or approved equal, US-sourced stainless steel
- (2) Propellers, Sound Propeller or approved equal, 5 bladed, 74" Diameter, pitched per final recommendation, DAR 0.76, CF3 stainless, Style Sound B, both RH
- (1) Vulkan shaft coupling
- (1) Kahlenberg or approved equal Muff coupling

252.1 PROPULSION CONTROL SYSTEM

The electronic propulsion control system shall be quoted and provided as part of the integrated power and propulsion system by ABB. The CONTR shall install an electronic propulsion control system, with ABB control heads in Pilot House, EOS, and Bridgewing Station. The electronic control system shall provide control of the generator engine governors, the propulsion motors, the reduction gears, and Power Mode Selector. The system shall be provided with redundant power supplies and automatic power transfer. A back-up control system shall be incorporated. A failure alarm system shall be provided for the control and hydraulic system functions. The CONTR shall provide for a Tech Rep for commissioning, startup, and sea trials as appropriate, at CONTR expense.

Propulsion Control System shall comply with 46 CFR 121.620.

Propulsion Motor controls shall include ahead and reverse functions for each motor separately at each Pilothouse conning position. Control station transfer shall be IAW in accordance with 46 CFR. See Section 982.1.2.4 for PSTP and DVTP requirements.

259.1 EXHAUST SYSTEMS

259.1.1 GENERATOR & BOILER EXHAUST SYSTEM

The CONTR shall provide and install generators, emergency generator and heating boiler exhaust systems, in accordance with the Contract DWGS. The components of the system shall be as detailed on Dwg D372-P1 and on the Exhaust System Bill of Materials DWG D372-P1, or approved equal. Exhaust will discharge through the uptake located port "island" FR51, with emergency generator exhaust routed into the main stack at the 02 deck level. The exhaust systems shall include manifolds, silencers, removable flex connectors, expansion joints, hangers, and associated hardware to comprise complete and operational exhaust systems. Risers and pipe shall be schedule 40 carbon steel. Exposed exterior exhaust piping will be 316 stainless steel to a flange inside of stack as shown. Hot piping shall be fitted with high-temperature, approved, fiberglass blanket insulation (Ref: D372-P1).

259.1.2 BATTERY GAS EXHAUST SYSTEM

The CONTR shall provide and install independent battery gas exhaust (off-gassing) systems for each the port and starboard battery rooms. The components of the system shall be as detailed on DWG D372-P1 and on the Exhaust System Bill of Materials DWG D372-P1, or approved equal. Off-gas piping will be routed out of the top of each battery room and through a port and starboard battery vent trunk located at port FR45 and starboard FR57 up to the Pilot House Deck. On the Pilot House Deck, the off-gas pipes will be run along the forward port and aft starboard corners of the Pilot House, partitioned from the rest of the space by bulkheads. The off-gas piping shall include a drain in the battery room at the lowest point in the system and shall outlet on top of the pilothouse via a gooseneck with a flame screen. The final installation shall be approved by Corvus. (Ref: D372-P1)

261.1 FUEL OIL SYSTEM

261.1.1 SYSTEM

The CONTR will fabricate and install a fuel oil system which will include (2) 2500 gallon steel F.O. tanks located centerline FR16 to FR19 and FR 83 to FR 86 and (1) 120 gallon emergency generator fuel tank located below pilothouse. Main tank piping will include 1-1/2" fill line; a fill station (FR53 inboard side of port "island") with cam locks; a fill station containment; 2" vent line; plugged valve drain fitting for sludge and water removal; and fuel oil suction lines. The Fuel oil transfer pump will be a Viking model HL4195 or approved equal, rated 30 GPM with a 2 horsepower 1750 rpm motor (Ref: DWGs D372-P4 and D372-P12). Transfer pump shall be provided with 1 1/2" suction line, 1" discharge line to emergency generator fuel tank, and 1 1/2" overflow/return line from emergency generator fuel tank back to main fuel tank. Emergency generator fuel tank shall also be fitted with 1 1/2" vent line to housetop. Transfer pump shall be inter-connected with high level alarm system installed in emergency generator fuel tank.

The CONTR shall supply Meson hydraulic Emergency shut off valve system by W&O Supply, or approved equal, for the main fuel oil and emergency generator suction. Meson quick closing valves shall be outfitted with GC control unit and associated hydraulics. All piping, valves, fittings, and connections shall conform to USCG requirements.

CONTR shall provide and install a fuel centrifuge system complete with foundation, and all piping and valves shown on DWG D372-P4. Centrifuge shall be Alfa Laval MAB-103, 240VAC, 60 Hz, 3-phase model or approved equal. Centrifuge shall be fitted with remote shutdown from outside the engine room/auxiliary engine room.

261.1.2 FILTERS

The main generators fuel oil supply shall be fitted with Racor, or approved equal, duplex primary filters and secondary particle filters. The furnace and emergency generator fuel oil supply lines shall be fitted with Racor or approved equal duplex filters. Drip pans with low point drains, cutoff valves, and USCG approved hoses are needed under all filters.

261.1.3 FUEL SOUNDING

The main fuel oil tanks shall be fitted with GEMS Suresite sight gauges or approved equal with levels visible in main engine room. Manual sounding tube with plug and striker plate shall also be fitted to tank. Emergency generator fuel tank shall be fitted with sight GEMS Suresite sight gauge, or approved equal.

261.1.4 SHUT DOWNS

The CONTR shall supply Meson hydraulic Emergency shut off valve system by W&O Supply, or approved equal, in compliance with USCG requirements.

261.1.5 VENTS

Fuel tank vent shall be run to the F.O. vent station retention boxes at the bulwarks FR 22 Starboard and FR 80 Starboard and be fitted with audible whistle alarms. Emergency generator fuel tank vent shall be run to a retention box on top of the emergency generator fuel tank in the emergency generator room. Provision for complete drainage shall be provided and field fit by the CONTR. Drain connections that are accessible below main deck require a threaded cap cover in retention box.

262.1 LUBE OIL SYSTEM

The CONTR shall fabricate and install a lube oil system with one (1) 500 gallon clean lube oil tank located to port in the auxiliary engine room FR62-FR64. Lube Oil Tank fill piping will include 1-1/2" fill line; a fill station (FR54 inboard side of port "island") with cam lock and cap. A vent station shall be provided and installed on the main deck inboard port side of the superstructure at FR 63. The fill and vent station shall each be equipped with an oil retention box containment. (Ref: DWG D372-P11).

The clean lube oil tank shall be fitted with a fill spigot and drip pan located to the approval of MaineDOT at a height and location convenient for filling 5 gallon pails. The lube oil tank shall be fitted with an Alemite pneumatic diaphragm pump 8322-A rated 15 GPM, or approved equal in the auxiliary engine room connected to a tank mounted oil reel (8080-B), filter/regulator (7936), meter (3670), hose (317813-80) and nozzle with drip pan located to the approval of the MaineDOT. The hose on the reel shall be long enough to reach the main machinery fills.

263.1 DIRTY OIL SYSTEM

The CONTR shall fabricate and install a dirty oil system with one (1) 500 gallon dirty oil tank located FR19-21 port, sharing a transverse boundary with the forward fuel oil tank. CONTR shall provide and install a dirty lube oil pump. Pump shall be a Tuthill model CC9 series rated 9 GPM with a 1/2 HP 1750 RPM motor, or approved equal. A pump-off station shall be provided and installed at FR 53 inboard side of the port "island" and a tank vent shall be provided and installed on the main deck inboard side of the bulwark FR22 starboard. The suction pump-off station shall be equipped with an oil retention box containment. Provision for complete drainage shall be provided. Drain connections that are accessible below main deck require a threaded cap

cover in retention box. The suction pump-off shall be fitted with a cam lock fitting and cap (Ref: DWG D372-P11 & DWG D372-P12). CONTR shall supply a portable air operated double diaphragm pump with acetal housing and a minimum of 13 gpm.

Waste oil suction lines and valves shall be provided and installed for the (2) generator engine sumps with USCG approved flexible hose connection (Ref: DWG D372-P11).

SWBS SECTION 300 ELECTRICAL

The following specifications and drawings referenced provide for the Electrical System Installation required to be performed under this contract:

- 300.1 REFERENCE DRAWINGS
- 300.2 GENERAL SCOPE
- 304.1 CABLE
- 311.1 DIESEL GENERATORS
- 311.2 EMERGENCY DIESEL GENERATOR (EDG)
- 311.3 HYBRID SYSTEM COMPONENTS
- 313.1 BATTERIES & CHARGERS
- 321.1 POWER DISTRIBUTION
- 324.1 SWITCHBOARDS & POWER PANELS
- 331.1 LIGHTING FIXTURES & ILLUMINATION
- 332.0 ELECTRICAL SYSTEM TESTS

300.1 REFERENCE DRAWINGS

D372-E1	ELECTRICAL ONE-LINE DIAGRAM
D372-E2	ELECTRICAL LOAD ANALYSIS
D372-E3	ELECTRICAL LIGHTING DIAGRAM

300.2 GENERAL SCOPE

The CONTR shall provide and install complete AC and DC electrical systems in accordance with the Contract DWGS. The electrical systems shall conform to the requirements of USCG 46 CFR, ABS standards, and IEEE requirements. Bulkhead and deck penetrations shall be made with watertight strain relief fittings and multi-cable RISE brand transits or approved equal. Wireways, wire hangers, and tie wraps shall be installed so as to prevent sags or chafes.

Electrical equipment and components shall be located in a manner that most readily facilitates operation and allows for ease of maintenance. Doors and panels must be capable of being fully opened. In accordance with Subchapter “J” 46 CFR 111, sufficient clear space shall be provided in front and back of the main switchboard and power panels to allow for removal of components within. Primary access to the main and emergency switchboards shall be from the front.

For Electronic Propulsion Control Specifications see Section 252.1.

304.1 CABLE

All electrical cable shall meet the standards specified in 46 CFR 111.60. Cable shall not be spliced. Insulation resistance for all cable shall be in accordance with IEEE 45. The design is based on Tricab cable bend radius. Tricab cable or approved equal shall be used unless specifically noted otherwise on the electrical plans. Electrical cable shall be installed with dedicated supports every 18" or run in wireways by the most direct routing. In general, cable separations shall be as designated in the ABB Cable and Connection Guide. The propulsion motors, battery banks, generators, off grid transformers, charging connections, and bus ties shall be provided with dedicated cable runs. Cableway crossings shall be as nearly perpendicular as practical. Cables below the floor plates in the hold shall be protected to the extent required by the USCG. Cables in the superstructure shall be concealed behind joiner bulkheads or overheads. Wireways and supports shall be stainless steel. Cables shall be secured with stainless steel banding. Cables exposed to weather shall be sea water resistant and/or mounted in pipe conduit, or otherwise protected. Cables exposed in the vicinity of structure or mechanical installations shall be armored, mounted in pipe conduit, or otherwise protected. All cables terminating in the weather shall be run inside the deckhouse as far as practicable. Cable penetrations through bulkheads and decks not required to be watertight, weathertight, or fire-tight shall be lined with flat bar or pipe to form collars. Watertight, fire-tight, and weathertight penetrations for multi-cable runs shall be made using cable transits. Cable transits shall be sized to allow for growth for additional cables during future modifications over the service life of the vessel. Fire-tight penetrations shall be insulated to the fire rating of the boundary. Cables shall be installed in single-banked or double-banked configuration, per IEEE 45. Structural integrity and regulatory tonnage opening spacing must be maintained in all locations where cable routing is through a steel member. Avoid large cutouts in girders, reinforcing any transit cutout with flat bar surrounds. Zip ties shall not be permitted.

311.1 DIESEL GENERATORS

The Diesel Generators shall be quoted and provided as part of the integrated power and propulsion system by ABB by Milton Cat, Milford, MA. The CONTR shall provide and install two (2) Caterpillar/Ramme variable speed ship's service diesel generators in accordance with the Contract DWGS. The gensets shall comply with applicable EPA emission standards for newly manufactured marine engines of their class and shall be installed complete with all systems. They shall each be Caterpillar marine engine model C-18 coupled with Ramme HW 500 permanent magnet-generator (550 kW, 1800 RPM). C-18 ACERT series; 600 kWm at 1800 RPM; EPA Tier 3/IMO II compliant, A-rated for continuous service. The CONTR shall install the Diesel Generators and all associated equipment. The Diesel Generator package is being quoted to ABB by Milton CAT Inc., Milford, MA for this project.

Each Generator engine shall be supplied with the following standard and optional equipment:

- SCAC Separate Circuit After-cooled
- Keel cooling for Jacket Water and Separate Aftercooler Circuits (See Section 520.1)
- Dry air filter element w/ service indicator
- Turbocharger, jacket water cooled
- Turbocharger inlet 6 in straight connection
- Programmable Low Idle
- Electronic Diagnostics, Fault Logging
- Engine speed, temperature, pressure monitoring
- Electronic fuel/air ratio control
- Engine Protection Mode
- 70 pin connector
- ECM shutdowns for High jacket water coolant temp, low oil pressure, overspeed
- SCAC pump, gear driven
- JW pump, gear driven
- SCAC and JW shunt tanks
- Water cooled exhaust manifold & turbocharger
- 6 in flanged exhaust outlet
- SAE No. 1 flywheel housing
- SAE No. 1 flywheel
- Front service simplex fuel system
- Gear driven fuel transfer pump
- Manual fuel priming pump
- Hybrid fuel line design
- Front service lube simplex system
- Deep sump oil pan
- Oil filler locations front & top
- Front service dipstick
- Oil pump, gear driven
- Resilient mount system, four-point
- Front damper guard
- Front service engine
- Common electrical ground point
- Front service for lube, fuel filters
- Ingersol-Rand air starter (one generator)
- 24 VDC electric starter motor right side (one generator)
- 24 VDC alternator, 105 A, belt-driven (one generator)
- Hydraulic pump drive
- Jacket water heater, 1.5 kw
- Engine Control Panel
- Fuel cooler
- USCG approved flexible fuel lines
- SOLAS spray shielding for fuel filter and fuel lines
- Lube oil drain lines

- Pressure cap and filler neck kit
- Closed crankcase ventilation
- Green Passport documentation
- IMO EIAPP certification
- Commercial paint finish, Cat yellow
- Torsional Vibration Analysis (TVA)
- Factory supplied fluids
- Parts & Service Manuals (3 sets)
- USCG Approved shutdowns and safety features including overspeed, low oil pressure, and high temperature shutdowns
- Steel base w/resilient sound mounts and drip tray
- Factory test run (witness for one or both main engines at MaineDOT's discretion - Witness expenses shall be at MaineDOT's expense)

CONTR shall install for the Ramme permanent magnet generators:

- Low voltage connections and cables for temperature sensors and interlocks
- High voltage connections for output power
- Pipe and Piping, connections to liquid-cooling circuit (DWG D372-P14)

311.1.1 SPARE GENERATOR PARTS

- Belt, idler pulley
- Thermostat, thermostat gasket, thermostat seal
- Fuel pump w/sealing washer
- Water Pump, water pump gasket, water pump seal
- Air, Oil, and Fuel Filters
- Voltage Regulator
- Filter Head Assembly w/ pump
- Fuel/Water Separator
- Enough filters for two complete changes of all filters required for each engine.

Spares shall be crated for storage and shipped directly to a MaineDOT storage facility as designated by MaineDOT. This is a guide only, the manufacturer's recommendations shall also be included at a minimum.

311.2 EMERGENCY DIESEL GENERATOR (EDG)

The Emergency Diesel Generator shall be quoted and provided as part of the integrated power and propulsion system by ABB by Milton Cat, Milford, MA. The CONTR shall install the EDG

to be located in the Emergency Diesel Generator Room on the 02-Deck below the pilothouse. The EDG shall be an air-cooled Caterpillar Model C7.1 rated at 138 kW, 60 Hz, three-phase, 208V. Installation shall be complete with Fuel Oil System, Alarm & Monitoring, Exhaust System, block heater, and all ancillary equipment as called out on the Contract DWGS and as required to operate and be approved as an EDG. The CONTR shall plan to provide a factory certified Tech Rep for commissioning, startup, and sea trials. The CONTR shall submit documentation to MaineDOT.

311.2.1 SPARE EMERGENCY GENERATOR PARTS

- (1) 24V Starter Motor Kit
- Belt, idler pulley
- Thermostat, thermostat gasket, thermostat seal
- 24V alternator
- Water Pump, water pump gasket, water pump seal
- Air, Oil, and Fuel Filters
- Voltage Regulator
- Fuel Lift Pump Assembly
- Fuel/Water Separator

311.3 HYBRID SYSTEM COMPONENTS

CONTR shall install the hybrid system components that are to be included in the ABB Scope of Supply. CONTR shall refer to the ABB Integrator Manual and Installation Manuals for requirements for installation of each component, and the Contract Drawings showing cooling systems and electrical systems.

313.1 BATTERIES & CHARGERS

313.1.1 ENERGY STORAGE SYSTEM (ESS)

The Energy Storage System shall be quoted and provided as part of the integrated power and propulsion system by ABB. The CONTR shall install a complete Lithium-Ion Energy Storage System as shown on the Contract Drawings and as provided for in the ABB Scope of Supply.

CONTR shall be responsible for storage and maintenance of batteries. CONTR will coordinate timeliness of delivery of energy storage system components to ensure optimal battery health. CONTR is responsible for cost of prolonged storage costs if construction causes delays to overall project delivery schedule.

System shall be as provided by Corvus Energy, air-cooled system divided into 20 packs of Model E2250V1 vertical battery units, each with capacity of 124 KWh for a total installed capacity of 2480 KWh. System will consist of 20 racks of batteries arranged and installed as shown in the two dedicated battery rooms located in the engine room, between frames 40 and 48 on the port side and between frames 54 and 62 on the starboard side. Corvus shall additionally supply the following components along with the Battery Racks:

- Battery Control Unit
- String Controller Unit
- Battery Controller Signal Interface Box
- Battery Management System
- Module Control Board
- Documentation including fire studies conducted on battery model used to the satisfaction of USCG MSC at no additional cost through the life of the project.

CONTR shall install the following interfaces to the ESS, as required by the Corvus Energy Integration Specification and Installation Manuals:

- High Voltage connections between the SCU and ABB' Junction Boxes
- Communication Links between BCU and ABB' Control Units
- Low Voltage 24 VDC control power to BCSI
- Emergency Stop input connection
- CONTR-Provide Exhaust Vent System and Inlet System (See D372-M9)
- CONTR-Provide Off-Gas Vents to pilothouse top (D372-P1)
- CONTR-Provided Mist Fire Suppression system (D372-P5)

CONTR shall mount the battery racks to the deck in hold using the Corvus-supplied mounting system. CONTR shall secure the top of the battery racks to overhead structure using steel angle trusses and vibration isolator mounts attached to the top of battery rack.

313.1.2 12/24V DC Power Systems

The CONTR shall provide and install 12/24V DC Service and emergency systems in compliance with 46 CFR Part 112 and the Contract DWGS (Ref: DWG D372-E1, E2). The systems shall include Optima D34M batteries or approved equal (sized per load requirements), 55 amp-hour batteries connected in series supplying engine room electronics, running lights, designated alarms, and pilothouse electronics. These battery banks shall be charged by 12/24V battery chargers, Lamarche A12B-20-12V and Lamarche A12B-25-24V, or approved equal, fed from a 240V AC circuits. All requirements of 46 CFR 112.55 shall be met.

313.1.3 ANTICIPATED 12/24V DC EMERGENCY LOADS

- Pilothouse DC panels
- Vessel Control and Monitoring systems (ABB VMS)
- Diesel Generator Control power
- PA and Alarm Systems

313.1.4 GENERATOR ENGINE STARTING 24V DC

The CONTR shall provide and install a dedicated 24V generator engine starting battery bank for each of the diesel generator engines. They shall be sized as per the engine manufacturer's recommendations and charged by Newmar, or approved equal, battery chargers fed from 120V AC circuits.

321.1 POWER DISTRIBUTION

321.1.1 SHORE POWER

The main switchboards shall be capable of distributing and transferring between (3) shore power connection stations, generator, and ESS inputs. All USCG requirements for safety, indicators, etc., shall be adhered to. Two (2) shore power receptacles compatible with MaineDOT's existing shore power connectors (Appleton) shall be provided and installed as per the Contract DWGS. The shore power connections shall be fitted with a watertight cap and shall be located on the port bulwark at FR 6 and at FR 91, so as to provide easy access for the shore power cable connection. Both 200 Amp, 240V and 200 Amp, 480V connectors shall be included at each shore power connection location. Cable shall not be routed through the forward collision bulkhead. Provision shall be made by the CONTR for protected routing of cable along the bulwark to a penetration aft of FR 8 and forward of FR 94.

321.1.2 POWER REQUIREMENTS

The available Shore Power service is 200 Amp, 240V, 3-phase. The CONTR shall provide a properly sized, one-hundred (100') foot long marine/ferry use (example – TRICAB EZ/EY) shore power cable with connections at each end to match the vessel and shore end power connections. MaineDOT/ABB will provide a specification for the shore end connector to be compatible with the shore power plug to be used. The CONTR is responsible to provide and install this connector. Storage via a direct crank heavy duty rewind reel either bulkhead mounted or one piece front foot/steel wheels with rubber tires at the direction of MaineDOT shall be provided by CONTR.

The Shore Power system shall supply the main switchboards. Shore Power system shall be coordinated with ABB to provide simultaneous charging of batteries and service to normal shipboard loads. Distribution to lighting, electrical outlets, engine block heaters, battery chargers, etc. shall be in accordance with Electrical One-Line diagram (Ref: DWG D372-E1). Further, the Shore Power system, in coordination with ABB, shall provide for automatic starting of emergency generator and connection to normal shipboard loads upon failure of shore power.

321.1.3 RAPID CHARGING

The CONTR is responsible to provide and install a Zinus SWC200 rapid charging cable receptacle as part of the integrated power and propulsion system by ABB. The Zinus receptacle shall be installed on the 02 deck port at approximately FR 72. Final location will be determined in conjunction with the separate MaineDOT terminal upgrade project. Foundation and cable penetration locations to be approved by MaineDOT prior to construction. (See ABB specifications for additional requirements/details). The CONTR is responsible to install up to two (2) positioning switches provided by ABB. These switches will provide positive feedback to the rapid charging system that the vessel is in a safe position for charging. If the vessel moves while in dock, they will alert the system to disconnect. Switches must be located so that they contact continuous vertical structure on the pier. Final location will be determined in conjunction with the separate MaineDOT terminal upgrade project. Switches will be small, bolt mount components weighing less than 50lbs each.

324.1 SWITCHBOARDS & POWER PANELS

324.1.1 MAIN SWITCHBOARDS

The CONTR shall provide and install marine switchboards, provided as part of the integrated power and propulsion system by ABB, capable of distributing and transferring between shore power and hybrid system inputs. With Diesel Generator's off, switchboard shall allow connection of shore power to ESS battery system for charging through the ABB Onboard DC Grid.

The switchboards shall be located in the engine room as per DWGS D372-A1-1 and D372-A9. Metering and indicators for current, voltage, ground fault, and power available shall be provided as per USCG requirements. Switchboards shall be designed primarily for front access.

324.1.2 EMERGENCY SWITCHBOARD

The CONTR shall provide and install a marine emergency switchboard, by ABB, capable of distributing power to the emergency power panels and automatically energizing upon loss of ESS, Diesel Generator, or shore power in compliance with the requirements of 46 CFR Subchapter "J" for Subchapter "H" passenger vessels. Switchboard shall be designed primarily for front access.

324.1.3 POWER PANELS

Distribution breaker panels shall be Square "D", or approved equal, and must meet the requirements of IEEE STD 45, Section 23.1. The electrical equipment scheme (DWGS D372-A1-1) and general arrangement drawing (D372-A9) designate panel locations. At a minimum, the AC power/lighting distribution system shall include two main distribution sections (part of ship's service switchboard), emergency distribution section (part of emergency switchboard), engine room power/lighting panel, engine room ventilation power panel, crew space

power/lighting panel, auxiliary engine room power/lighting panel, 02 deck HVAC power panel, 02 deck power/lighting panel, pilot house power/lighting panel, EDG emergency power/lighting panel and pilot house emergency power/lighting panel. At a minimum the DC power distribution system shall include a 24VDC electronics panel and a 12VDC electronics panel.

Power and lighting panels which are accessible to passengers shall have latches with locks keyed alike. Labels are to be provided on each panel showing designation, voltage, and bus rating. A circuit directory card mounted in a plastic faced holder shall be completed and posted inside each panel door. Panels located in the Engine Room shall be NEMA 12 (IP 22) with doors fitted with gaskets. A panel located in interior spaces such as the passenger cabin may be NEMA 1.

324.1.4 CIRCUIT BREAKERS

Each breaker shall have sufficient interrupting capacity to safely interrupt the maximum fault current obtainable at its point of application.

Circuit breakers shall be by ABB (or approved equal) and shall be of the commercial molded case type, quick-make, quick-break, with inverse time tripping characteristics on overloads and instantaneous trip device for short circuits, except as noted. Two and three pole breakers shall have common trip handles. Breakers shall clearly show when they have been tripped by over-current. All circuit breakers shall be UL 489 listed.

The CONTR shall provide panels with one spare circuit breaker and space for one additional breaker for every ten active circuits or fraction thereof. Spares shall be representative of the breaker sizes used in that panel.

324.1.5 ELECTRICAL SPARES

The electrical spares shall be provided as outlined in the ABB specifications.

331.1 LIGHTING FIXTURES & ILLUMINATION

331.1.1 GENERAL

The vessel shall be adequately lighted throughout with approved lighting fixtures. Fixtures shall comply with the requirements of Publication UL595, UL1598 and UL1598A. The CONTR is responsible to see that all facets of lighting, particularly in public spaces, are complete, and fully adequate for the service intended.

All lighting fixtures shall be provided and installed by the CONTR. The CONTR is responsible to develop working DWGS for installations as required. These DWGS shall be in compliance with the requirements of CFR Subchapter "J".

Public spaces shall be supplied by at least two circuits so that the failure of one circuit will not leave a space without lighting. Flush mounted ceiling fixtures shall be provided and all wiring

shall be concealed. Switches, where provided, shall be flush mounted. Switch plates shall be color coordinated with the space where installed.

Lighting is to be controlled by zones through a 7" minimum touchscreen interface, using a productivity 3000 PLC or approved equal, located in the pilot house. Zones shall be at final approval of MaineDOT.

Fixtures shall be designed for the particular location and service required and shall be installed in interior and exterior locations as specified below.

- Downlights shall be Pauluhn Meridian LED Downlight Model DLL14-35K, or approved equal.
- Panel lights in cabin drop ceiling shall be LCD M607 LED Flush Panel, or approved equal.
- Freight Deck under the superstructure house center lane and P&S outboard lanes shall be Crouse-Hinds V3LM2CHBF1 LED flood light, or approved equal.
- Hold Deck voids and miscellaneous work areas that have no drop ceiling shall be Pauluhn Intrepid LED Linear Fixture FPS2L, or approved equal.
- Primary Machinery Spaces (Engine Room, Workshop, and Auxiliary Engine Room) shall be Pauluhn Intrepid LED Linear Fixture FPS2L, or approved equal.
- Exterior Bulhead Mounted Lights shall be Phoenix VA-W-17LED-CW-FCG, or approved equal
- Battery Room fixtures shall be explosion proof hazardous area LED linear fixtures, Crouse-Hinds HLL-2-3L-D-1/6-225, or approved equal.
- Pathway Lights
- Engine Room – Emergency Lighting in way of switchboards

331.1.2 INTERIOR LIGHTING

The CONTR shall provide and install adequate lighting for all passenger spaces crew spaces, stairways and passageways, work spaces, machinery spaces, voids, and storage spaces. Lighting levels shall comply with the Illumination Engineering Society (IES) Publication RP-12, “Recommended Practice for Marine Lighting”. Interior superstructure lighting shall be switched from the distribution panel as shown on the Electrical One-line DWG. Engine Room lighting shall be switched locally from just inside the Main Deck Engine Room Access Door at FR45, at the crew space WT door entry at FR 40, and at the Auxiliary Engine Room WT door entry at FR 62. Auxiliary Engine Room lighting shall be switched locally from just inside the Main Deck Auxiliary Engine Room Access Door at FR61 and at the Engine Room WT door entry at FR 62. Interior hull void lighting shall be switched locally at vertical ladder entry locations.

Passenger cabins on 01 Deck, Port and Starboard shall be fitted with USB outlets (4 per unit) along both side bulkheads at 6’ intervals (approx.) where seating is installed.

The following types and quantities of lighting fixtures are provided as a guide only. Lighting shall be LED. Lighting power shall be in accordance with DWG D372-E3. The provided lighting shall not be less than this guide:

(See DWG D372-E3 for guidance)

The CONTR shall provide LED spare lamps (6) of each type.

331.1.3 EXTERIOR LIGHTING

The CONTR shall provide and install navigation lights; floodlights to illuminate main deck, vehicle and passenger transit areas; weather deck lighting; and searchlights.

Exterior lights shall be switched from the pilothouse distribution panels, 01-deck lighting panels, inside the main deck engine room access at FR 45, or pilothouse navigation light panel as appropriate. IBA and Rescue Boat floods shall be on E-circuits.

(See DWG D372-E3 for guidance)

NOTE: All Main Deck floodlighting shall be switched from a crew only accessible panel located on the Main Deck to the approval of MaineDOT. Lighting may be grouped in accordance with superstructure sides (ie. Lights on port outboard side on one switch).

The CONTR shall provide 10 additional JBOX LED lights with LED converters, associated wire and hardware and install at MaineDOT's direction. Any remaining will be counted towards spares.

331.1.4 EMERGENCY LIGHTING

Emergency Lighting shall be provided and installed in accordance with DWG D372-E3. Emergency lighting shall furnish adequate levels of illumination to allow for emergency operations and movement throughout the vessel in situations of main switchboard power loss. Emergency Lighting fixtures shall be fed from lighting distribution panels connected to the emergency switchboard. Outside and inside emergency lights shall not be connected to the same branch lighting circuits. All E-lights shall be labeled with a red "E" symbol. Use similar Pauluhn fixtures to those specified under 331.1.2, or approved equals.

331.1.5 EXIT LIGHTS

Exit lighting shall be on emergency lighting circuits. Fixtures shall be Crouse Hinds Ex-Lite ZE Exit Light, or approved equal, ceiling or wall mount as appropriate at each exit location.

331.1.6 FLOODLIGHTS

Floodlights shall be Crouse-Hinds V3LM2CHBF1 LED Flood Light or approved equal (Ref: Section 583.1.5). Floodlights shall be mounted on suitable welded platforms (including a

support gusset) attached to a bulkhead or the junction of the top 02-Deck rail at a rail stanchion as appropriate. Locations shall be approved by MaineDOT. Approximate locations: (See DWG D372-E3 for guidance)

Each floodlight shall be equipped with a cord and watertight plug. Electrical service shall be provided in close proximity to each rail mounted light by a surface-mounted switched receptacle.

Floodlight installations are to include all cabling to an emergency power panel; penetrations and kick-pipes as required, and hardware, switches, etc. to make the lights fully operational in conformance with the CFR and operational testing performance for MaineDOT and USCG approval.

331.1.7.1 IBA RACK & LAUNCH FLOODLIGHTS

Floodlights for illumination of the IBA rack areas (FR 35 Port and FR 70 Starboard) shall be provided and installed on the 02-Deck Stair Trunks FR 40 Port and FR 62 Starboard and switched from the Pilothouse. Floodlights for the IBA launch areas P&S shall be provided and installed on the 02-Deck rails and switched locally. Floodlights shall not cause interference with the terminal/mooring location. These locations shall be approved by the USCG OCMI.

331.1.7.2 RESCUE BOAT CRADLE & LAUNCH FLOODLIGHTS

A floodlight for illumination of the Rescue Boat Cradle area shall be mounted on the starboard 02 deck rail at FR 31. A floodlight for illumination of the Rescue Boat launch area shall be provided and installed on the Pilothouse Deck rail at FR 44 and switched locally at the Rescue Boat gear locker and in the pilothouse. The floodlight shall not cause interference with the terminal/mooring location.

331.1.8 SEARCHLIGHTS

(2) Carlisle & Finch Model XY3EDE-24ARF3 with anti-icing heater, CFX350 lamp, C4-1-1 master station, and 3PS115 power supply, or approved equal to be mounted on pilothouse roof, one forward and one aft centerline.

331.1.9 NAVIGATION LIGHTS & PANEL

See Section 422.1

331.1.10 ILLUMINATION LEVELS

In addition to satisfying the general illumination requirements for all compartments, particular attention shall be given to the installation of detail illumination for such items and areas as gauges, instruments, and switchboards.

Fixtures in work areas shall be arranged so that shadows are not cast on work surfaces and glare is not reflected off gauges or instruments. Illumination shall be so that gauges, sight glasses, etc. may be accurately read from usual and convenient operating positions. Fixtures shall be shaded to prevent glare as required.

331.1.11 JUNCTION BOXES

All junction boxes shall be accessible as per 46 CFR 56.4.2.

331.1.12 LIGHTING SPARES

The CONTR shall provide spares for lighting fixtures as follows:

- (6) LED down-light fixture “cans”
- (6) LED down-light trim pieces
- (12) LED down-light lamps (one case)
- (6) LED panels
- (2) LED 24” linear unit light
- (2) Explosion Proof LED battery room light
- (4) Pathway lights

332.0 ELECTRICAL SYSTEM TESTS

- Insulation resistance (megger) test all power distribution cables, insulated motor and generator windings in accordance with the applicable requirements of the CFR.
- Visually inspect motor alignment with driven load (in instances where the load is not close-coupled).
- Manually operate all circuit breakers, disconnect switches, mode selectors, and pushbuttons to demonstrate correct operation.
- Bump test to verify that motors operate in the correct direction of rotation.
- Demonstrate correct system operation in all modes.
- Pre-commissioning, commissioning, dock, harbor and sea trials tests as directed by ABB

Documentation of these activities shall be submitted to MaineDOT.

SWBS SECTION 400 ALARMS, INTERNAL COMMUNICATIONS, NAVIGATION

The following specifications and drawings referenced provide for the Alarms, Navigation Systems, and Internal Communications Systems Modifications required to be performed under this contract:

- 400.1 REFERENCE DRAWINGS
- 421.1 NAVIGATION SYSTEMS (NON-ELECTRICAL)
- 422.1 NAV LIGHTS & NAV LIGHT PANEL
- 423.1 NAV SYSTEMS (ELECTRONIC)
- 433.1 INTERNAL COMMUNICATIONS (PA, SP PHONE, GEN ALARM, LOUD Hailer)
- 436.1 SAFETY & SECURITY SYSTEMS
- 439.1 CCTV
- 441.1 EXTERNAL COMMUNICATION (RADIOS)
- 446.1 EXTERNAL COMMUNICATION (AIS)

400.1 REFERENCE DRAWINGS

D372-A1-1 GEN ARRGTs HOLD & MAIN DECK

D372-A1-2 GENERAL ARRGTs 01-DECK & PILOTHOUSE

D372-A8 COLREGS PLAN & NAVIGATION LIGHT MAST DETAILS

D372-P10 COMPRESSED AIR PIPING SCHEMATIC

421.1 NAVIGATION SYSTEMS (NON-ELECTRICAL)

421.1.1 FLAGS & SHAPES

The CONTR shall provide (2) black portable, nylon folding Not-Under-Command balls to comply with the Inland Rules of the Road (CalJune, or equal, 24" diameter). The CONTR shall provide (1) black portable, nylon folding Anchor ball (CalJune, or equal, 24" diameter). These day shapes shall be stowed in the pilothouse with line and hardware suitable for rapid deployment.

The CONTR shall provide (2) 3' x 5' US ensigns, (1) red "B" flag fueling pennant, and (2) steering pennants. Masts shall be rigged with flag halyards and hardware (blocks & clips) for the ensign, two signal pennant halyards, and two steering pennant halyards. See Section 171.

421.1.2 EMERGENCY SIGNALS

The CONTR shall provide (12) hand held, rocket propelled, red emergency flares in a labeled, watertight plastic box to be stowed in the pilothouse.

421.1.3 EPIRB

The CONTR shall provide and install a GPS capable EPIRB unit with bracket incorporating a hydrostatic release for vessel delivery (ACR, or equal). EPIRB registration paperwork shall be posted in the pilot house.

421.1.4 ANCHOR SIGNAL BELL

The CONTR shall provide a removable 12" diameter bronze bell w/lanyard, meeting the requirements of 33 CFR 86.02. The bell bracket shall be mounted on the exterior pilothouse bulkhead in a location approved by MaineDOT.

421.1.5 MAGNETIC COMPASS

The CONTR shall provide and install a Ritchie Model B-463 Globemaster magnetic compass, or approved equal, black, 6" diameter, w/red 24V light, w/quadrantal spheres and anti-vibration binnacle on centerline at the forward console steering station. The compass shall be "swung" and a deviation card provided as per Section 982 "Sea Trials".

421.1.6 FIRST AID KIT & AED

The CONTR shall provide a USCG approved first aid kit to be installed in a Pilothouse location to the approval of the MaineDOT. The CONTR shall install an AED in the pilothouse location to be approved by the MaineDOT.

421.1.7 AIR HORN & CONTROLLER

The CONTR shall provide and install (1 set) air horn and timer, Kahlenberg S-330-DVM-H with signal controller Model M522 or approved equal (Ref: Section 551.0 and DWG D372-P10). Horn shall include a manual pull above each pilothouse console. Sound signal appliances shall meet 33 CFR 86.

421.1.8 CLOCKS

The CONTR shall provide and install two (2) Weems & Plath Model Admiral 290500 or approved equal, quartz clocks. Locations shall be to the approval of the MaineDOT.

421.1.9 BAROMETER

The CONTR shall provide and install a Weems & Plath Model Admiral 290700 or approved equal, aneroid barometer. Location shall be to the approval of the MaineDOT.

421.1.10 ANEMOMETER

The CONTR shall provide and install a Maximum, Inc. Model Vigilant (black dial face w/white lettering) or approved equal, anemometer complete with mast mount sensor, AC adapter, and pilothouse display. Location of both sensor and display shall be to the approval of the MaineDOT.

422.1 NAVIGATION LIGHTS & NAVIGATION LIGHT PANELS

Navigation lights shall be provided and arranged to comply with the requirements of the Inland Rules Of The Road (Ref: D372-A8). The CONTR shall provide and install a 120VAC navigation light panel that is compatible with McDermott LED navigation lights (J-Box, Glamox, Loco-Light, or approved equal) in the pilothouse. The panel is to be compliant with IEEE Standard 45 Section 34.2 and USCG 46 CFR 111.75-17. Navigation lights shall be USCG approved by McDermott or approved equal as shown on DWG D372-A8. Screens fitted behind navigation lights shall be painted matte black or as required by USCG.

- (2 double) sidelight (red) 10-point, LED, McDermott TB3 or equal
- (2 double) sidelight (green) 10-point, LED, McDermott TB3 or equal
- (4 double) masthead light (white) 20-point, LED, McDermott TB6 or equal
- (2 double) stern light (white) 12-point, LED McDermott TB3 or equal
- (2 each) anchor light (white) 32-point, LED McDermott TB3 or equal
- (2 each) not under command (red) 32-point, LED McDermott TB3 or equal

Reference: DWG D372-A8

423.1 NAVIGATION SYSTEMS (ELECTRONIC)

The CONTR shall provide and install the following electronic navigation systems. The manufacturers and models listed shall be considered to be OR APPROVED EQUAL and may differ depending upon MaineDOT's preferences to match existing fleet equipment. The CONTR shall provide a factory certified Tech Rep for Electronic Navigation Equipment commissioning, startup, and sea trials.

- RADAR: (2) Furuno FR8125 w/4 foot antennas, inter-switched, 115VAC and 24 VDC
- GPS UNIT: (1) Furuno GP170D
- VHF RADIO: (2) ICOM M506 (See Section 441.1)

- HAILER/INTERCOM: Furuno LH5000 (Locations: PH control, Main Deck (2) intercoms one each loading station)
- AIS: (1) Furuno FA170 (See Section 446.1)
- DEPTH SOUNDER: Furuno FCV588
- NAV COMPUTER – local CPU with (2) 24” dimmable monitors
- SAT COMPASS: Furuno SC70
- AUTOPILOT: Simrad AP70 Mk II to interface with the Jastram Engineering, steering system
- NMEA Backbone system to link Electronic Navigation Systems

See Sections 439.1, 441.1, & 446.1 for additional pilothouse electronic equipment.

433.1 INTERNAL COMMUNICATIONS

433.1.1 PUBLIC ADDRESS & EMERGENCY NOTIFICATION SYSTEM

The CONTR shall provide and install a commercial quality Public Address System which incorporates an Emergency Notification System feature, Zenitel SPA-V2-Redundant PAGA System, or equal. The System amplifier shall be located in the Pilothouse and shall be powered on an emergency circuit. System shall comply with 46 CFR 121.610, with announcements made from Pilothouse station. The system shall be capable of sounding a General Alarm signal, as required by 46 CFR 120.550(c).

The System shall be complete and shall incorporate the following equipment: Pilothouse mike; amplifier; equalizer module; exterior and interior speakers; volume Control module; power conditioner module; (4) auxiliary jack input in securable weather rated boxes on weather decks. The system shall provide a flashing light feature on speakers when notifications are being made, in addition to audible signal. Additional emergency announcements may be made to appear on the television screens mounted in the passenger cabins. CONTR shall provide power and mounting for two (2) television screens per cabin as well as CAT 6 cabling for communication with the units. CONTR to submit documentation to MaineDOT prior to ordering.

Interior speakers (ceiling mount style) shall be located to the approval of the MaineDOT. These are a minimum and for reference only. Additional speakers may be required per USCG requirements.

- Port passenger cabin (2)
- Starboard passenger cabin (2)
- Crew Break room (2)
- Engine room EOS (1)
- Auxiliary Engine Room (1)
- Engineers Workshop (1)

Exterior speakers (trumpet style) shall be located to the approval of the MaineDOT.

- 02-Deck – (2) one each P&S
- Main Deck Fwd – (1) centerline on visor at 01-Deck level
- Main Deck Aft – (1) centerline on visor at 01-Deck level
- Main Deck Port Vehicle Lane – (2)
- Main Deck Starboard Vehicle Lane – (2)

Intercom Communication from Wheelchair Lift shall be located to the approval of the MaineDOT. System shall be powered in elevator by 4 hour UPS system, together with cab light.

- Wheelchair Lift Interior
- Pilothouse

433.1.2 LOUDHAILER

The CONTR shall provide and install a Loudhailer system, Furuno LH3000, or approved equal. The system shall include (2) loudhailer/intercom horns (1 each at Main Deck loading station) so that the Pilothouse can establish two-way communications with personnel manning the forward and aft docking/vehicle loading stations. Speakers shall be located to the approval of MaineDOT (Ref: Section 423.1).

433.1.3 SOUND POWERED PHONE SYSTEM

The CONTR shall provide and install a Sound Powered Phone System, Hose McCann, or approved equal. All steering stations shall have sound powered headsets to accompany hand sets. All stations shall have required jack for headsets. The system shall comprise Sound Powered Phone stations:

- Pilothouse (on vertical face of console)
- Emergency Diesel Generator Room (located approval of MaineDOT)
- Forward Main Deck loading station (exterior watertight box)
- Aft Main Deck loading station (exterior watertight box)
- Crew Break Room (located approval of MaineDOT)
- Engineers Workshop (located approval of MaineDOT)
- EOS (located approval of MaineDOT)
- Auxiliary Engine Room (located approval of MaineDOT)
- Forepeak Steering Station (located approval of MaineDOT)
- Aftpeak Steering Station (located approval of MaineDOT)
- Bridge Wing Console (exterior watertight box)

The EOS station shall be located to the approval of MaineDOT. The EOS station, Aux ER station, and Engineers Workshop station shall have a bell sound signal and remote mounted

strobe light signal mounted in a location to the approval of MaineDOT. System shall comply with 46CFR 121.602.

433.1.4 CONTROL & ALARM CONSOLES

CONTR shall provide and install alarm and monitoring systems as required by 46 CFR 76 & 62.25, for fire detection system and fire alarm system, 46 CFR 62.35 for bilge level alarm system, and machinery alarm systems (ABB Vessel Management System) as required by these Specifications and as recommended by the machinery and hybrid system manufacturers.

Alarm and detection system shall be provided for ESS System Li-Ion gas detection in battery gas exhaust system. System shall be by Li-Ion Tamer or approved equal. System shall be interconnected with the fire detection and alarm system provided for the vessel. Each Port and Starboard ESS fire detection system consists of three types of sensors: smoke, heat and ion gas detection. Overnight (when not manned) the fire suppression system shall be automatically discharged, if any two of the three sensor types detect levels out of the acceptable range. The system shall have a manual switch for daytime operations whereby the crew would engage the system if failures were detected. The back up ventilation would also automatically engage if a high/low temperature was observed at any time of day. An automatic communication from the vessel to a dedicated service administrator shall be issued in the event of an alarm for the battery rooms.

CONTR shall plan for fire detection in the following spaces as a minimum:

- Forepeak
- Aftpeak
- Crew Break Rm Common Space (3)
- Engineers Workshop (2)
- Battery Room Port
- Battery Room Starboard
- Crew Head Below Deck
- Engine Room (5)
- Auxiliary Engine Room (4)
- Main Deck Lockers (2)
- Passenger Heads 01 Deck (3)
- EDG Room 02 Deck
- Pilothouse
- Crew Head 02 Deck
- Corridor 02 Deck
- Rescue Boat Station

The main consoles for gauges and alarm panel in the pilothouse, at the breaker panel, and in the EOS will be by ABB designee.

Alarm panels, at a minimum, shall provide alarm functions for:

For each generator and reduction gear:

- Low lube oil pressure alarm (audible and visible)
- Low lube oil level alarm “
- Low gear oil pressure alarm “
- High gear oil temp, alarm “
- High gear oil temp, alarm “
- Low coolant level alarm “
- High jacket water temp. alarm “
- High SCAC water temp. alarm “
- High exhaust temp alarm “

Note : Shutdowns shall be as per USCG requirements.

For each generator and generator engine:

- Generator running indicator light
- Low lube oil pressure alarm (audible and visible)
- Low lube oil level alarm (audible and visible)
- Low coolant level alarm (audible and visible)
- High jacket water temp. alarm (audible and visible)

Note : Shutdowns shall be as per USCG requirements.

436.1 SAFETY & SECURITY SYSTEMS

The CONTR shall provide and install approved life rings and brackets as required by USCG regulations and at the direction of the OCMI.

(4 each) Life rings: CalJune, or approved equal; 24” orange, w/brackets. One ring shall be located on each bridge wing, one adjacent to the fore and aft Main Deck loading station areas and shall each be equipped with a lifeline. These two life rings shall be equipped with an approved strobe light. Life rings shall be stenciled with the vessel’s name and hailing port.

(269) PFD, type I Adult, stenciled with vessel name

(25 each) PFD, type I Child, stenciled with vessel name.

The CONTR shall provide and install the following items at locations determined by MaineDOT:

- (1 each) Automated External Defibrillator (AED) with bulkhead mount housing case for CONTR installation in a location as determined by the MaineDOT OREP.
- (6 each) Work Safety Vests, stenciled with vessel name (one with a 50' tether and snap shackle)
- (4 each) Inflatable Buoyant Apparatus – Viking or approved equal open reversible life raft - 50 persons, stenciled with vessel name including installation hardware bowsing lines, turning blocks, hydrostatic release units, and storage racks.
- (4 each) 3M Scott ELSA Emergency Escape Breathing Device – N (EEBD-N) with bulkhead mounting hardware, or approved equal to be mounted in two engineering locations determined by MaineDOT.
- (3 each) ENESPRO Class 0 Rubber Voltage 11" Glove Kit or approved equal
- (1 each) ENESPRO 12 CAL HOVER XTR Series Face shield KIT, KITHP12TR or approved equal
- (2 each) ENESPRO 10 CAL NOMEX FR BALACLAVA (Flash hood) or approved equal
- (2 each) 48.0104 Fireman's Turnout Coat, NFPA Large yellow 42" - 46" chest or approved equal
- (2 each) 48.0204 Fireman's Turnout Pants w/ Suspenders, NFPA, Lg yellow 37" - 41" waist
- (3 each) MSA 10215805 MSA G-1 Industrial SCBA w/ 30min. alum cylinder, Med. mask w poly harness, backpack, case
- (2 each) MSA 10183006 30 Minute Aluminum 2216psi Cylinder for G-1 SCBA
- (2 each) MSA 39851 Wall Mount Bracket, SCBA Walk-Away
- (2 each) 48.0560 Fireman Gloves, NFPA, Lg
- (8 each) NSA Heavy Duty PBI High Heat Glove G51PCLW13714 or approved equal
- (2 each) 48.0515 Fireman helmet NFPA, Red with 4"faceshield & Nomex Ear flaps, reflective trim.
- (2 each) 48.0410 Bunker Boot, NFPA, size 10
- (1 each) LIFELINE 100 Lifeline, 100' w/ snap hooks
- (1 each) Frontline TAN07RURP MEGApod 7' Aluminum Tripod with 60' Winch and 60' 3-way SRL
- (2 each) Industrial blower kit with 15' ducting w/ ETL, UL, CSA, EN Certification

- (1 each) INDUSTRIAL SCIENTIFIC Multi-Gas Detector: Ventis MX4, Rechargeable Lithium, MFR. Model VKVSP4-K11211 or approved equal
- (6 each) 3765PL Right Angle Light: Pelican light or approved equal
- (4 each) 2010PL SabreLite Pelican flashlight
- (2 each) Darley P-100 (NAVY P100) 2BE10YDN Part Number: 2BE10YDN P100 P-100
 NSN: 4320-01-387-2869, w/ Pump Type: 2BE10YD (Note: Rope Start), w/ Standard volute orientation, w/ exhaust primer, w/ Loss of Prime Protection System, w/ (2) 10' suction hoses, w/ Discharge Thread Adapters (1) Size 1-1/2" NH x 1-1/2" NPT (1) Size 2-1/2" NH x 2-1/2" NPT, w/ Suction Thread Adapters, with Screen (1) Size 2-1/2" NH x 3" NPT (1) Size 3" NH x 3" NPT, w/ Master Drain, w/ Mounted Panel and Roll Cage

436.1.1 PFD STORAGE

PFD storage for a full complement of passengers, plus 15%, plus crew PFD's (294 total) shall be provided. Interior Passenger PFD storage shall be in lockers in the port and starboard cabins. Exterior Passenger PFD storage shall be in Libra OL Series GRP, or approved equal, white lockers with hinged doors located in accordance with DWG D372-A1.

Crew PFDs shall be located in Pilothouse, Crew Break Room, and EOS appropriate to crew complement.

CONTR shall include PFD donning instruction placard on PFD storage lockers.

437.1 ENGINE ORDER TELEGRAPH

The CONTR shall provide and install an engine order telegraph (EOT) system with interface panels located in the Pilothouse console at each end of the vessel and the EOS console as indicated in the ABB scope documents. The telegraph for each drivetrain shall be fully compatible with the requirements of 46 CFR 113.35. Each panel shall incorporate two (2) separate telegraphs; one (1) for each propulsion drive train. The telegraph for each drivetrain shall allow the captain to transmit orders for both ahead and astern propulsion commands. The EOS panel shall also provide indication of the vessel direction such that the operator can identify the direction of thrust based on joystick movements. The EOT panels shall be flush mounted and shall feature pushbutton style interface and local audible and visual signals.

439.1 CCTV

The CONTR shall provide and install a CCTV system consisting of control equipment and display monitor in pilothouse with additional display monitor in EOS. Monitors shall be HD 22 Inch Thin LED Monitor with HDMI VGA Built in Speaker Compatible with CCTV Security

DVR NVR CCTV, or approved equal. Cameras shall be located to the approval of the MaineDOT. Entire CCTV system shall be compliant with NDAA Section 889. Cameras and recorder system shall be by Honeywell, Series 30, or approved equal. Approximate camera locations and general camera focus coverage locations are:

- 02-Deck FR45 focus fwd (exterior)
- 02-Deck FR55.5 focus aft (exterior)
- 02-Deck FR30 starboard focus port fwd (exterior)
- 02-Deck FR30 port focus port fwd (exterior)
- 02-Deck FR72 starboard focus port fwd (exterior)
- 02-Deck FR72 port focus port fwd (exterior)
- 02-Deck FR55 starboard focus wheelchair lift and crew space entry (exterior)
- 02 Deck FR58 port focus rapid charging receptacle (exterior)
- 01-Deck FR45 port focus inboard and fwd (interior)
- 01-Deck FR45 port focus inboard and aft (interior)
- 01-Deck FR45 starboard focus inboard and fwd (interior)
- 01-Deck FR45 starboard focus inboard and aft (interior)
- Main Deck FR51 centerline focus fwd (exterior)
- Main Deck FR51 centerline focus aft (exterior)
- Main Deck FR12 port wing focus aft (exterior)
- Main Deck FR12 starboard wing focus aft (exterior)
- Main Deck FR86 port wing focus fwd (exterior)
- Main Deck FR86 starboard wing focus fwd (exterior)
- Hold Deck Engine Room FR44 centerline focus aft and to starboard (interior)
- Hold Deck Engine Room FR48 port focus aft (interior)
- Hold Deck Battery Room FR40 port focus aft (interior)
- Hold Deck Battery Room FR62 starboard focus fwd (interior)
- Hold Deck Workshop FR 28 focus aft and to port (interior)
- Hold Deck Auxiliary Engine Room FR62 centerline focus aft (interior)

TOTAL (16) exterior (12) interior assuming 2 extra zones each interior and exterior determined on board located as approved by MaineDOT.

441.1 EXTERNAL COMMUNICATIONS (RADIO)

The CONTR shall provide and install (2) ICOM Model 506 (or approved equal) VHF radios and (2) COMRAD AV 60 antennas. Power shall be supplied by an emergency circuit. Antennas shall be located on the Pilothouse top P&S as shown on DWG D372-A1 and A3 and located as approved by MaineDOT.

441.2 EXTERNAL COMMUNICATIONS (AIS)

The electronic navigation and communication package shall include a USCG approved and operational AIS system. All components of this system shall meet the approval of MaineDOT. The system shall be Furuno FA170 AIS, or approved equal, and shall be fully integrated in the Pilothouse console (Ref: Section 423.1).

The AIS system shall be interfaced with pilothouse navigation and communication equipment. Power to all electronic navigation and communication equipment shall be supplied by an emergency power circuit.

441.3 EXTERNAL COMMUNICATIONS (Wi-Fi)

The CONTR shall install ABB Wi-Fi system provided as part of the integrated power and propulsion system by ABB. The system includes two (2) antennas on the Lincolnville end for communication with shore power rapid charging system.

Additionally, a Starlink, or approved equal flat high performance antenna and wedge mount maritime and mobility wi-fi system shall be provided and installed. Wireless routers shall be connected for Wi-Fi access throughout the passenger and crew spaces. The Starlink Wi-Fi is separate from the ABB Wi-Fi for security purposes.

CONTR shall provide and install a RADIUS or approved equal server for network security. Wireless routers shall be mesh system type. Routers must be on a managed switch and captive portal for secure access.

SWBS SECTION 500 INSULATION, HVAC, PIPING, FIRE SUPPRESSION

The following specifications and drawings referenced provide for the Piping Systems, HVAC, and Fire Suppression required to be performed under this contract:

- 500.1 REFERENCE DRAWINGS
- 500.2 PIPING SYSTEMS
- 508.1 INSULATION
- 511.1 HVAC
- 520.1 SEA CHESTS, KEEL COOLERS
- 521.1 FIRE MAIN & BILGE SYSTEMS
- 526.1 SCUPPERS & DECK DRAINS
- 528.1 SANITARY SYSTEM
- 529.2 BILGE SLOPS (OILY WATER) SYSTEM
- 533.1 POTABLE WATER SYSTEM
- 551.0 COMPRESSED AIR SYSTEM
- 555.1 FIRE EXTINGUISHING
- 561.1 STEERING SYSTEM
- 568.1 MANUEVERING & CONTROL
- 573.6 VEHICLE TIE DOWN SYSTEM
- 581.1 ANCHOR HANDLING & STOWAGE
- 582.1 MOORING SYSTEM
- 582.2 PIPING TESTS
- 583.1 RESCUE BOAT & DAVIT
- 584.0 VEHICLE GATES
- 585.0 WHEELCHAIR LIFT

500.1 REFERENCE DRAWINGS

D372-A11	STRUCTURAL FIRE PROTECTION PLAN
D372-M2	RUDDER & STEERING ARRGT & DETAILS
D372-M4	ANCHOR ARRGTs & CHAIN LOCKER
D372-P1	M.E. & GENERATOR EXHAUST ARRGTs & DETAILS
D372-P5	POTABLE WATER PIPING SCHEMATIC
D372-P6	DRAIN, WASTE, VENT & FLUSHING WATER PIPING SCHEMATIC

D372-P7	FIRE MAIN SYSTEM PLAN
D372-P8	SPRINKLER SCHEMATIC
D372-P9	BILGE PIPE SCHEMATIC & SEA CHEST DETAILS
D372-P10	COMPRESSED AIR PIPING SCHEMATIC
D372-P12	TANK VENT & SOUNDING TUBE SCHEMATIC
D372-P13	HVAC BOILER WATER PIPE SCHEMATIC
D372-P14	KEEL COOLER PIPING SCHEMATIC

500.2 PIPING SYSTEMS

Piping shall be installed in accordance with USCG requirements. Pipe runs shall, as far as possible, be kept clear of work or access areas. Pipes will be secured to structure by bolted clips and hangers. Pipe runs requiring regular maintenance shall be separated by flanges to facilitate removal. Bulkhead penetrations shall conform to USCG regulations. All pipe hangers shall be 316 Stainless steel as directed by the MaineDOT.

Exposed pipe runs or pipe runs located in unheated spaces shall be protected against freeze-up by heat-tape and insulation. All fresh water lines shall have drain cocks installed to allow for system drainage to prevent freeze-up during winter layup or repair periods.

All valves shall be clearly labeled and provided with permanent non-corroding metal tags. All valve handwheels shall be painted by the CONTR to match the approved pipe marking system. All valves within each piping system shall be assigned a three place sequential numbering system preceded by the appropriate letter abbreviation for that system. The valve label shall also include its abbreviated function description within its system, e.g., Fire Main Cutout Valve No. 3, FM COV - 003

All piping systems shall be marked with wraparound film pipe marking system complying with MSI (Marking Services Inc.) system, or approved equal. Markers MS-995 / MS-975, or approved equal shall be applied to piping systems as directed by MaineDOT. System shall indicate type of fluid and direction of flow in each pipe.

All centrifugal pumps shall be of cast iron construction with bronze fittings. Close coupled pumps shall be designed so that impellers and motor assembly may be removed without disturbing the suction or discharge piping. Base mounted pumps shall be equipped with coupling guards. Couplings shall be Falk, Woods, Lovejoy, Dodge Paraflex, or equal. Unless otherwise specified, horizontal close coupled pumps are preferred where possible. Pumps shall be fitted with mechanical seals. Pumps handling sea water shall be fitted for saltwater service, having wetted rotating parts of bronze, Monel or 316L stainless steel construction. Non-wetted parts may be cast iron. Shafts, cap screws, keys and washers shall be Monel or 316L stainless steel. Pumps handling fluids other than sea water shall have bronze or 316L stainless steel

impellers, wearing rings and shaft sleeves. Motor driven pumps shall be furnished complete with a marine type motor, flexible coupling if not a close coupled unit, and mounted on a common base. Generally, pumps 2½" and over shall be flanged, equal to ANSI standards. Specific pumps, locations, and capacities are as shown on the Plans.

Pipe welding shall be accomplished using GTAW process for the root fill and cap or a combination of GTAW and SMAW unless otherwise approved by MaineDOT OREP and MaineDOT Fabrication Engineer.

CONTR shall accomplish pipe welding using consumable back rings for open root pipe joints. Consumable backing rings are to be Robvon type or an approved equal.

CONTR shall accomplish welding of pipe socket welds using consumable socket weld contraction rings. Consumable contraction rings are to be GAL gage type or an approved equal.

Piping connections to ABB provided equipment shall use vibration isolating expansion joints (Garlock or approved equal).

508.1 INSULATION

508.1.1 THERMAL & STRUCTURAL FIRE PROTECTION

CONTR shall provide and install structural fire protection insulation on bulkheads and overheads generally as shown on the Contract Drawings. The CONTR shall use NVIC 9-97 Ch. 1 (Guide to Structural Fire Protection Aboard Merchant Ships) as guidance. All materials used in the structural fire protection system shall be approved for use and submitted to UCSG with current approval certificates. CONTR shall submit complete fire protection system to MaineDOT for review and approval prior to ordering and installation. Mineral wool shall be attached to the structure using welded pins as required. Any glue used in system shall be incidental to the attachment system and be approved as fireproof. The assembled insulation blankets or batts shall maintain the required fire rating for the given installed locations as shown in D372-A11.

Exterior boundaries (sides and overheads) of hull (Starboard FR28 to FR40), Watertight Bulkhead FR28 in way of crew space in hold, Watertight Bulkhead FR74 in way of Auxiliary Engine Room in hold, 01 deck accommodation and superstructure spaces (sides, overheads, and below decks), 02 deck stair trunks (sides and overhead), 02 deck crew accessible area (sides, overhead, and deck), Pilothouse (sides, overhead, and deck), and enclosed work spaces bulkheads and overheads shall be thermally insulated with minimum 3-inch thick USCG approved faced baton-type fiberglass insulation or with mineral wool in accordance with the Structural Fire Protection Plans (D372-A11). Extend fire and thermal insulation and facing where applicable 12 inches past the beyond the surface treated for bulkheads and decks and 12 inches beyond the surface for beams and stiffeners. Seal edges and joints of insulation with tape as recommended by the insulation manufacturer to present a smooth continuously sealed surface. Insulation fastening shall be USCG approved. All insulation in hold compartments and exterior insulation of decks or bulkheads that are insulated are to be finished with white heavy duty

sealed mylar covering, fastened and with seams and edges taped in accordance with the manufacturer's recommendations. Insulated spaces exposed to weather shall also be sheathed in a 16 gauge stainless steel sheet metal to protect fire insulation from damage and weather. Additional mounting structure in overhead may be required to support sheet metal over insulation. Insulated spaces in hold where joiner is not present shall be sheathed in perforated aluminum facing in addition to the mylar. Metal sheathing shall be overlapped or joined per manufacturers' recommendations and painted in accordance with coatings schedule. Insulation materials shall be USCG type approved "non-combustible material" under 46 CFR 164.006, 164.007, 164.008, 164.009, 164.107, 164.108, & 164.109 for the intended use and shall be 100% free of asbestos-containing materials. The CONTR shall provide insulation arrangement and details and proof of USCG certification of materials selected to MaineDOT for review prior to start of installation.

CONTR shall take the insulation thickness into account when installing piping, cable trays, and other systems along a bulkhead or deck to be insulated. Sufficient clearance must be maintained from the insulated surface to allow installation without compression of or gaps in the material. CONTR is responsible for repair, replacement and redress of any insulation components damaged during the course of production activities.

508.1.2 EXHAUST LAGGING & INSULATION

All insulation materials and installation details shall be in accordance with ASTM Volume 01.07 "Shipbuilding" Standard F683 except as detailed herein.

The generator engines and furnace exhaust systems shall be provided with high temperature, exhaust wrap, removable, sewn pads/blankets by GT Exhaust or approved equal (Ref: DWG D372-P1). Prepare surfaces by cleaning before applying insulation and follow manufacturer's recommendations. Provide and install aluminum sheet metal covering in way of access areas where the insulation will be subject to damage or personnel contact to the satisfaction of MaineDOT. The exhaust system shall be isolated from the hull with flexible stabilizers and raincap funnels. Exhaust isolation design and materials are to be provided by Soundown, or approved equal.

Battery room exhaust ducts exposed to weather on the 02 deck, shall be insulated and faced with white mylar covering with seams fastened and taped.

508.1.3 UPTAKE & INTAKE SOUND INSULATION

In addition to specified structural fire protection insulation, all uptake bulkheads shall be insulated with 1" Johns Manville Incombustible Hullboard with perforated glass cloth, or approved equal from the deck cutout to the engine room to 12" above the 01 deck plate. All insulation materials shall conform to requirements set forth in 46 CFR 164.009 or 164.109. The insulation material shall be fastened with seams and edges taped in accordance with the manufacturer's recommendations.

Bulkheads and deck that surround the engine room air intake trunk shall have a layer of 1” Johns Manville Incombustible Hullboard with perforated glass cloth, or approved equal acoustic insulation on the fan side of the bulkhead/deck.

511.1 HVAC

511.1.1 GENERAL

The CONTR shall provide and install HVAC equipment, ductwork, etc. in accordance with the Contract DWGS. HVAC calculations have been generated in the process of creating the HVAC Boiler Water Pipe Schematic DWG D372-P15, Hold Ventilation DWG D372-M7, and HVAC System Installation DWG D372-M9.

Louvers throughout the vessel shall be stainless steel bolt in Halton USM Marine External Louver with insect screen, or approved equal, unless specifically described otherwise. Louvers are to be flange mounted flush with bulkheads so as not to intrude on vehicle lanes or passenger walkways. Automatic fire damper controls for Halton dampers shall be Halton FD-CON-2 or approved equal. Delta T Systems Slimline dampers shall use Delta T supplied controls, or controls, or approved equal system.

511.1.2 HEATING

The CONTR shall provide and install a 5 zone hot water heating system consisting of a Weil McLain boiler Series 80 Model 680 or approved equal, (2) Bell and Gossett or approved equal circulation pumps or approved equal (1 backup), for a total of 3, supply and return manifolds, system piping, fittings, heater units, bulkhead mounted ECO, or approved equal radiant heaters or Modine, or approved hot water heaters or Multitherm, or approved hot water duct heaters or Haydon, or approved equal baseboard heaters, and thermostats as detailed herein and on DWG D372-P15. All shall be provided and installed as follows (Sized according to D372-P15):

ZONE 1 (Radiant)

- Pilothouse (2)
- 02-Deck Crew Head (1)
- 02-Deck Passageway (2)

ZONE 2 (Baseboard, Radiant & Duct)

- 01-Deck Starboard Passenger Cabin (5)
- 01-Deck Starboard Passenger Head (1)
- 01-Deck Starboard Unisex Head (1)

ZONE 3 (Radiant & Duct)

- Hold Crew Break Room (3)
- Hold Crew Head (1)

- EOS (1)

ZONE 4 (Modine & Baseboard)

- Engine Room (2)
- Auxiliary Engine Room (1)
- Engineer's Shop/Stores (2)
- Forward Steering Gear Compartment (1)
- Aft Steering Gear Compartment (1)

ZONE 5 (Baseboard, Radiant & Duct)

- 01 Deck Port Passenger Space (5)
- 01 Deck Port Passenger Head Fwd (1)
- 01 Deck Port Passenger Head Aft (1)

Hot water supply and return lines connect to the supply and return manifolds and thence to the Engine Room located Weil-McLain hot water heating boiler, or equal (Ref: D372-P15).

Hot water lines to radiant heaters shall be run to heaters from within the cabin to avoid running water lines in unheated spaces such as vehicle lanes below the 01 deck cabins. The heating system fluid shall have a mixture with propylene glycol for freeze protection. CONTR to observe manufacturer recommendations. Heating equipment shall be installed in a manner that allows for equipment isolation for servicing. Equipment shall not be installed in series unless specified otherwise.

511.1.2.1 BATTERY ROOM HEATING

The Battery Rooms shall be provided with heat (via split system units) to maintain temperatures in the space above the minimum of 15°C, per the Corvus energy storage system recommended temperature range. Further detail on the Battery Room split system units is provided in Section 511.1.3.7 BATTERY ROOMS.

511.1.3 COOLING & VENTILATION

511.1.3.1 PILOTHOUSE

The CONTR shall provide and install (3) Coleman Mach 3 Plus 13,500 BTU, 320 CFM AC Units, or approved equal on foundations located on the Pilothouse top. The Pilothouse AC system shall consist of AC Units, piping, fittings, ductwork, shrouds, etc. as required. Coleman Mach Deluxe Ceiling Assembly or approved equal shall be installed in the pilothouse interior for each unit. CONTR shall ensure penetrations are completely watertight and sealed around these units to prevent future leaks through the cutouts.

511.1.3.2 02 DECK (WEATHER)

The CONTR shall install two (2) Outside Condensing Units (OCUs), Mitsubishi PUHY-EP120TNU-A1, Outdoor VRF Heat Pump System, 120,00 BTUH Cooling and 135,000 BTUH heating system or approved equal, in the weather on the 02 Deck at frame 51 port and starboard as shown on DWG D372-M9. The OCUs shall consist of the OCU, AC piping, fittings, foundations, etc. as required. The CONTR shall ensure adequate maintenance clearances are provided around each OCU per the manufacturer's recommendations. The CONTR shall provide the condensing units with removable weather shrouds for the top and sides to prevent ice formation on the fan blades or condenser fins. The shroud shall not encroach manufacturers recommended clearances. The condensers shall be mounted on a base to provide clearance between the unit bottom and the deck.

511.1.3.3 EOS

The CONTR shall provide and install (1) Americool WPC-3000 13,200 BTU, or approved equal AC Unit on a bulkhead mounted foundation located on the EOS aft bulkhead starboard side FR44-FR45 outboard of the stairway engine room side of bulkhead. A 6" Diameter duct shall feed the EOS with a fire damper at FR 44. The EOS AC system shall consist of the AC Unit, thermostat, internal condensate pump, model WPC 115B. The Americool unit condensate pump discharge or approved equal shall tie into the black/grey water piping with a check valve at FR 45.

511.1.3.4 01-DECK P&S

The 01-decks P&S will not be air conditioned. Ventilation will be supplied to the Port and Starboard passenger decks via a 700 CFM fan Starboard and an 820 CFM fan to Port. Supply fans shall be provided with ductwork, fire dampers, and weather closures as required. Four (4) supply and one (1) exhaust diffusers are located in the Passenger Cabin Port and four (4) supply and one (1) exhaust diffusers are located in the Passenger Cabin Starboard per DWG D372-M9.

511.1.3.5 PASSENGER & CREW HEADS

The passenger and crew heads shall be equipped with ceiling mounted exhaust air fans. Supply air shall be by louvers in the head entrance doors. (Ref: D372-P9) Fans shall be Coolair vaneaxial blower, VA Series (various sizes) with charcoal filters, or approved equal.

Fans shall be arranged to exhaust to weather through louvers in forward and aft deckhouse bulkheads. Fans shall be provided with ductwork, dampers, and weather closures as required. As applicable, weather louvers shall be flush mounted so as not to encroach on the truck lane.

The crew head located on the 02-Deck shall be equipped with a ceiling mounted exhaust air fan. Fan shall be Broan Nutone Model 80 with charcoal filters, or approved equal. The crew head located in the hold's exhaust is interconnected to the fan located in the Crew Break Room.

511.1.3.5 CREW BREAK ROOM AND ENGINEERS WORKSHOP

The Crew Break Room will not be air conditioned. The crew break room shall have air supplied by (1) Coolair VA7D32 360 CFM Supply Fan, or approved equal. Supply air shall be via a hold supply air trunk. (REF: D372-M9). The crew break room shall have air exhausted by (1) Coolair VA7D32 360 CFM Exhaust Fan, or approved equal. Exhaust air shall be via hold exhaust air trunk. Supply and exhaust fans shall be fitted with sound attenuation blankets to reduce airborne noise.

The Engineers Workshop shall have air supplied by (1) Coolair VA10H34 1440 CFM Supply Fan, or approved equal. Supply air shall be via a horizontal Halton fire damper or approved equal at the main deck Model CFD-01 16"x16" with transition to 16" dia. round duct stainless with automatic electrical actuator, manual override and visible indicator in ER access stair at FR39 (Ref: D372-M9).

The crew break room shall have air exhausted by (1) Coolair VA10H34 1440 CFM Exhaust Fan, or approved equal. Exhaust air shall be via a horizontal Halton fire damper or approved equal at the main deck Model CFD-01 16"x16" with transition to 16" dia. round duct stainless with automatic electrical actuator, manual override and visible indicator in ER access stair at FR39. Supply and exhaust fans shall be fitted with sound attenuation blankets to reduce airborne noise.

Engineers Workshop ventilation is routed through the crew break room via the main supply and exhaust trunks on the main deck to ensure air changes and ventilation to all spaces within the watertight compartment FR 28 to FR 40 (Ref: D372-M9). CONTR shall make use of starboard deep floor lightening holes for supply and exhaust duct routing so that ducts are not in conflict with overhead clearance in crew break room (Ref: D372-A9). Soffits shall be constructed to house the air supply and exhaust ducts along the transverse WT BHDs and above cabinetry.

511.1.3.6 BATTERY ROOMS

Each Battery Room supply air shall be via louver on the 02 deck. A vertical Halton FDL-EL explosion proof fire damper or approved equal shall be installed at the main deck spool 14"dia with transition to 14"W x 14"H duct with automatic electrical actuator, manual override and visible indicator. Exhaust Ducts will terminate with (2) 10" x 10" square stainless duct. Each

10" W x 10"H square duct run will transition to a 10" diameter duct with a filter housing and then discharging through a 10" diameter Juniper Industries JE-102A Supply terminal, or approved equal. Supply air shall be 1705 CFM.

Each Battery Room exhaust air shall be via 24"W x 24"H Halton rain driven wind rated marine louver or approved equal stainless steel with insect screen on the Pilothouse Deck Bridgewing air trunk. Louvers shall have integrated flange for face mounting and perforated screen for aesthetic appeal subject to the approval of the MaineDOT. From the weather penetration, the ductwork will transition from 25"W x 9"H to a 14" diameter round duct to continue downward. Ducting on the 02 deck shall be insulated with a mylar covering and recessed into the overhead behind the pilothouse deck cap plate with stainless steel hangers. A vertical Halton FDL-EL explosion proof fire damper or approved equal shall be installed at the main deck spool 14"dia with transition to 14"W x 14"H duct with automatic electrical actuator, manual override and visible indicator. Exhaust Ducts will terminate with (2) 12" x 10" Tuttle and Bailey T70 Exhaust Grills, or approved equal. Ref: D372-M9. Intake and exhaust air ducts will be steel, self-contained, air-tight from the 02 deck to the battery rooms per ASTM F3353-19. Supply and Exhaust Fans to be non-sparking fan, explosion proof Class 1, Div 1, Group B and shall have the fan motor located outside of the air stream. Battery room (1625 cubic feet volume) air shall be changed a minimum of 6 times per hour. Air temperature window for Corvus batteries at the inlet to the ESS fans shall be maintained at 15 deg C to 20 deg C at the inlet to the ESS fans. All fixtures in the battery rooms and ducting to/from battery rooms shall be non-sparking with an explosion proof motor, Class 1, Div 1, Group B hazardous classification, or approved equal. The fire dampers and fans serving the Battery Rooms shall be integrated with the fire suppression system (DWG D372-P8). The fans serving these spaces shall have remote shutdown controls outside of the space, in the EOS and Pilothouse.

Air conditioning shall be provided by (2) independent split systems intended to be operated as primary and backup configurations. Each split systems consists of an outdoor condensing unit (2) Mitsubishi PUHY-EP120TNU-A1 or approved equal, an overhead air handling unit (4) Mitsubishi PLFY-P48NEMU-E or approved equal and a bulkhead mounted air handling unit (4) Mitsubishi PKFY-P12NLMU-E or approved equal. The primary and backup air conditioning systems, EACH consist of (1) outside condensing unit, (2) overhead air handling unit, and (2) bulkhead mounted air handling units. The main outdoor condensing unit located on the starboard 02-Deck Open Passenger Area at FR 50 will connect liquid and gas refrigerant piping to (1) overhead and (1) bulkhead mounted air handling unit in each Battery Room. The backup/emergency outdoor condensing unit located on the port 02-Deck Open Passenger Area at FR 50 will be configured similarly. Thermostats shall be provided for main and backup split systems in each Battery Room. Supply air filters shall be provided in each battery room as shown on DWG D372-M9. Air quality and humidity shall be per Corvus guidelines. Battery room

HVAC Controls, temperature gauge readout, equipment selectors, and alarms for individual equipment shall be integrated into a single simplified panel in each the EOS and pilothouse consoles.

All air handling units require condensate within the space to be discharged. All Battery Room air handling unit drains shall be interconnected by space and shall discharge to Bell and Gossett Condensate pumps or approved equal located in the Engine Room on the starboard side at FR 53 and port side at FR 49. Condensate drain piping within each Battery Room shall be routed as far away from electrical equipment as possible. The condensate pumps shall discharge into the grey and black water drain piping using a swing check valve. Condensate hoses shall be included when ordering equipment and shall be installed in accordance with 46 CFR 56.50-25(a)(3). Hoses shall be less than 30" in length and shall not penetrate any bulkhead or deck.

511.1.3.7 ENGINE ROOM

The Engine Room will be equipped with supply and exhaust ventilation trunks. The port side trunk shall be fitted with a supply fan as shown in DWG D372-M7. The fan shall be a Hartzell, variable speed vane-axial fan, A38, size 28, 5 HP, 1750 RPM, 12500 cfm @ 1.4" S.P., and 7500 cfm @ 1.7" S.P. or approved equal, with diffuser below deck, as shown. The supply fan shall be fitted with a sound attenuation blanket. A VFD shall be provided with control set-points programming into normal operating modes. The control system shall allow the ventilation to provide adequate cooling for battery only mode, as well as operation of one or both engines, while minimizing power consumption in all cases. The fan control system shall be integrated with the ABB switchboard I/Os to detect if one or both generators are running with an automatic set point for each as well as a temperature and pressure sensor in the engine room that provides feedback to the supply air controls. A manual override and fan mode indicator shall be provided at each pilothouse and EOS console. Air supply shall lead from a horizontal fire damper at main deck 28"x28" with transition to 28" round duct at fan inlet Halton Model CFD-01 or approved equal with automatic electrical actuators, manual override and visible indicator in passageway niche. CONTR to provide air distribution duct roughly as shown on DWG D372-M-7 to suit air circulation throughout engine room and also maintain 7'-0" height clearance above flats to bottom of duct.

Exhaust air shall be natural, from the engine room to the uptake trunk located on the port side 02 deck between FR49 to FR52 with two stacked louvers and two 31"W x 31"H 700-A60SL-31 Delta T Systems Slimline automatic fire dampers or approved equal with automatic electrical actuators, manual override and visible indicator, or approved equal with limited damper depth. CONTR to provide structure required to mount fire dampers inside of trunks behind weather louvers. CONTR to ensure proper sizing of weather louvers to fit openings.

511.1.3.8 AUXILIARY ENGINE ROOM

The auxiliary engine room shall have air supplied by (1) Hartzell Vaneaxial Blower, A38-M-146-W—STFQ12, or approved equal below deck, as shown. The supply fan shall be fitted with a sound attenuation blanket. Supply air shall be via louver (starboard) with fire damper at FR 63 (Ref: D372-M7). A VFD shall be provided with control set-points programming into normal operating modes. The control system shall allow the ventilation to provide adequate cooling for the space in summer and winter modes, ensuring adequate circulation while maintaining appropriate temperature levels for equipment. The intake fire damper will be horizontal 14"x14" with transition to 14" round duct at the main deck Model CFD-01, stainless, with automatic electrical actuators, manual override and visible indicator in ER escape recess. Natural exhaust is via a bolt-on 700-A60SL-1746 Delta T Systems Slimline vertical A-60 Fire damper or approved equal shall have automatic electrical actuators, manual override and visible indicator in main deck passageway niche. CONTR to provide necessary framing to suit installation of damper and louver. CONTR to provide air distribution duct roughly as shown on DWG D372-M-7 to suit air circulation throughout auxiliary engine room and also maintain 7'-0" height clearance above flats to bottom of duct.

511.1.3.9 EMERGENCY GENERATOR ROOM

The emergency generator room shall have air supplied via louver on the starboard transverse bulkhead at FR 46. A Halton FDA 12"x12" vertical fire damper or approved equal with electric actuator, manual override and indicator visible on exterior bulkhead under hinged access cover shall be mounted to inboard side of louver. CONTR to supply framing for damper/louver. A stainless steel radiator louver with A-0 damper shall also be installed as supplied by Milton CAT with CAT C7.1 radiator cooled unit. The louver is to be motorized to sync with generator operation.

511.1.3.10 FIRE DAMPERS

Where automatic fire dampers are required, they shall be designed to operate at approximately 165 degrees F. for normal locations. The dampers shall be installed so as to close against the anticipated draft in the duct. The damper shall be made accessible for periodic inspection by means of a hinged or bolted plate in the duct. The damper and the portion of duct containing the damper shall be constructed of at least 1/8 inch steel plate suitably stiffened. No insulation need be applied to damper blades. Fire dampers shall be fitted on at least one side of the bulkhead with a visible indicator showing whether the damper is in the open or closed position. The indicator may be connected to the manual operating device rather than the damper blade so that it might show as being open when it had automatically closed, but could never be open if the indicator showed it to be closed. The damper shall be capable of being manually closed from both sides of the bulkhead. The operating positions for the damper shall be marked. Damper casings and

blades shall be constructed of at least 3 mm (11 USSSG) thick steel. The operating components of the damper must be stainless steel or of equivalent corrosion resistance. Fire dampers installed in main vertical zone bulkheads must be capable of automatic operation by fusible link rated for 165 deg F. Engine room air intake, Auxiliary engine room air intake, Crew break room air intake, and Crew break room exhaust fire dampers require fusible links both from the compartments served and the vehicle lane.

520.1 SEA CHESTS, KEEL COOLERS

520.1.2 SEA CHESTS

Two sea chests shall be provided and installed one (1) in the Engine Room and one (1) in the Auxiliary Engine Room as shown generally on D372-P9 for the Fire Main System suction and Bilge System priming. Sea chests will be located near FR 49 to starboard and near FR 65 to port. The sea chests shall be fitted with bolted strainer plates flush with the hull plate and shall have anode cathodic protection installed (See Section 633). Suction and discharge piping will be connected with flanged couplings. Sea valves shall be bronze body gate valves and shall be located to expedite servicing and disassembly. Sea inlets and overboard discharges shall be properly reinforced with insert plates. Valves shall be flanged – no threaded valves shall be used. Piping between the overboard cutout valve and shell penetration shall be schedule 80 pipe except as noted in plans.

520.1.3 KEEL COOLERS

Cooling systems shall be provided and installed for the (2) Generator Engines, (2) PM Generator Machines, (2) Propulsion Motors, (2) Reduction Gears and (2) DC Switchboards. These shall be flange-type Fernstrum grid coolers, as called out on the equipment list DWG D372-M10. Guards shall be provided for each grid cooler that are adequate to protect against loose ice or flotsam strikes and are to be arranged to the approval of the MaineDOT. Keel Coolers guards shall not extend below the keel of the vessel.

Grid coolers shall be provided with isolator washers and spool pieces to electrically isolate the coolers from the hull. Coolers shall be provided with their own anodes.

The cooling systems shall be filled with a Glycol mix to the approval of CAT, Ramme, and ABB DC Switchboard Liquid Cooling Unit Specification and submitted to MaineDOT.

521.1 FIRE MAIN & BILGE SYSTEMS

521.1.1 FIRE MAIN SYSTEM

The Fire Main System will be supplied by (1) fire pump, with bilge pump as backup. The Fire Pump (standby bilge) shall be a Griswold HH Series, self-priming, centrifugal, 3x 2-8, 200 GPM

at 210 ft head, 25 HP at 3600 rpm, or approved equal. Quoted Pump Item 850CC/3x2-8/2P/0751/TO25LM/PC2 1 Pump Detail Series 850 End-Suction (NSF-50) 3x2-8 - Model: 3x2-8 Close-Coupled PM 3600 RPM 0751 - Impeller Trim (Inches): 7.51 T - Motor Phase: Three O – Enclosure Type: ODP W - Motor MFG: Weg LM - Motor Frame: 256JM PC2- Coating Options: Case/Bracket/Impeller (Internal). The fire and bilge pumps shall be interconnected to provide service and backup for the bilge and fire main systems.

The fire pump and back up bilge/fire pump is located in the Auxiliary Engine Room starboard near FR 68. Fire Main suction shall be taken from the sea chests in accordance with DWG D372-P9-1. The fire pump supply runs shall include cast bronze duplex suction strainers, valves, and piping. The Fire/Bilge pumps shall be cross-connected and capable of providing fire main pressure to all vessel fire stations (Ref: D372-P7). Additionally, a line shall be provided downstream of the battery room mist fire pump to serve as a means of last resort sea water supply to battery room sprinkler system (Ref: D372-P5).

The Fire/Bilge pumps shall be equipped with pressure gauges and relief valves installed immediately after the pump discharges. The pumps shall be sized and installed to provide the flow and pressure required by USCG regulations. The design shall be submitted to MaineDOT. The fire pump shall have both local and Pilothouse on/off control. Fire Main System piping shall be as called out on D372-P7 Material List.

Fire stations shall be provided and installed:

- Station #1: 02-Deck FR 45 Starboard
- Station #2: 02-Deck FR 55 Port
- Station #3: 01-Deck FR 55 Starboard
- Station #4: 01-Deck FR 55 Port
- Station #5: Main Deck FR 41 Starboard
- Station #6: Main Deck FR 40 Port
- Station #7: Main Deck FR 63 Starboard
- Station #8: Main Deck FR 62 Port
- Station #9: Crew Workshop FR 35 Starboard
- Station #10: Engine Room FR 45 Starboard Stanchion Mounted
- Station #11: Auxiliary Engine Room FR 62 Starboard

Each fire station shall be equipped with a 1½” fire hydrant valve with national standard fire hose coupling threads for 1½” hose couplings, 1½” UL listed fire hose 50-foot x 1-1/2” hose length with bronze couplings, combination nozzle fog/stream, weather tight hose cabinet (exterior locations only), hose rack, and coupling spanner as required by USCG regulations.

Exterior and Interior Fire Stations will be located in surface or recessed mount stainless steel cabinets as shown, Larsen Mfg., or equal,. Exterior stations, not on the vehicle deck, shall have a stainless steel door and stainless steel hinges. Interior stations shall have a clear Plexiglass “windows” in the door. Fire Stations 5, 6, 7, & 8 on the vehicle deck will have a stainless steel recessed enclosure with no hinged door. The cabinet shall be fitted with a flexible, protective, labeled access cover. Exterior fire stations shall be fitted with an accessible local drain valve that does not encroach on walkways or vehicle spaces. Piping shall be sloped to allow water to drain to low points to completely empty the system. All fire hose cabinet doors shall have stainless steel hinges.

521.1.2 BILGE SYSTEM

The system shall be capable of dewatering all spaces. CONTR shall ensure that low points in each space can be dewatered in the location selected for bilge suction. Pumps shall be interconnected to allow pumps to either supply sea water to the fire main and/or dewater the vessel as necessary. The CONTR shall provide and install necessary valves, check valves, strainers, pumps and piping to provide a complete bilge and ballast piping system in accordance with USCG requirements. CONTR shall submit complete bilge piping system to MaineDOT. The Fire/Bilge pumps shall have both local and Pilothouse on/off control and shall be piped to the bilge manifold and bilge piping system. System materials shall be as shown on DWG D372-P9. Bilge pump (backup fire) shall be Griswold HH Series, self-priming, centrifugal, 3x 2-8, 200 GPM at 210 ft head, 25 HP at 3600 rpm, or approved equal. Quoted Pump Item 850CC/3x2-8/2P/0751/TO25LM/PC2 1 Pump Detail Series 850 End-Suction (NSF-50) 3x2-8 - Model: 3x2-8 Close-Coupled PM 3600 RPM 0751 - Impeller Trim(Inches): 7.51 T - Motor Phase: Three O – Enclosure Type: ODP W - Motor MFG: Weg LM - Motor Frame: 256JM PC2- Coating Options: Case/Bracket/Impeller (Internal), or approved equal. The pumps shall be interconnected to provide service and backup for the bilge and firemain systems. Duplex strainers, Kraissl Model 72 or equal, cast bronze with stainless steel baskets, shall be installed at the suction side of the pumps. Bilge manifold shall be constructed of 6” Sch 80 black pipe and hot dipped galvanized after fabrication. Each connection shall be labeled to match suction location.

Individual bilge suction shall be connected to the bilge manifold and shall be fitted with Flowmatic Bronze Body Model 60SE or approved equal Foot Valves. Bilge pump (P-1) shall be piped for emergency overboard discharge. USCG approved bilge alarms shall be provided and installed in all compartments served by the bilge system with audible and visual digital readouts located on the pilothouse console. Suctions to be at or near low points in each compartment. In the engine room, suction is to be positioned at each battery room entry and as near as practical below switchboards.

Bilge manifold and pump shall be located aft of Engineers Operating Station bulkhead at FR 44. Bilge Pump and manifold are to be stacked as far as practical to ensure both are within 12 ft of centerline. CONTR shall ensure that NPSHA is greater than NPSHR for the pumps. The pump inlet should not be mounted above the height of the shallowest draft anticipated of 7’-8”. This

correlates to 3'-2" above the NT flat. Valves in the bilge system shall be bronze flanged bolt in type. Operating procedures for using the bilge suction manifold for dewatering shall be laminated and posted adjacent to this location.

CONTR shall provide watertight containment well in way of shaft glands consisting of longitudinal engine girders and transverse floor between frames 20 – 21 forward and frames 81 - 82 aft. Limber holes shall not be used in these areas. CONTR shall provide and install two automatic, float-actuated, self-priming shaft gland pumps. Pumps shall be mounted in the shaft gland sumps forward and aft, and be piped with 1 1/4" galvanized steel schedule 80 pipe directly to the overboard discharge with stop-check valves. Pumps shall be Dayton-Grainger 3YU71C, 1/2 HP, 115 VAC, or approved equal.

526.1 SCUPPERS AND DECK DRAINS

526.1.1 GENERAL

The CONTR shall install scuppers, limber holes, and drains to prevent accumulation of water in the hull and to provide adequate drainage for the exterior decks. The Main Deck shall be drained by freeing ports in the port and starboard superstructure side and bulwarks, as shown on the plans. Particular attention shall be given to providing drainage of exterior decks in way of passenger foot traffic areas and at the top and bottom of exterior stairways (Ref: D372-P3-1 & D372-A12). Limber holes shall be provided in all main deck passageways to prevent accumulation in corners. The CONTR shall install 1 1/2" deck drains with strainer plates to clear the tops of the deck houses and decks where freeing ports are not installed. The top of the pilothouse shall drain to the top of the 02 and the top of the 02 deck to the 01 deck. All drains including those in the stack shall allow for 100% drainage. All drainpipes shall be led inside the superstructure, and discharge onto the next lower exterior deck, or as the case may be all the way to the main deck discharging through the superstructure side. Elevator well drain with valve and cap shall be accessible by crew for drainage by bucket in the engine room. Drains lines shall be fabricated with no take down joints and as few bends as possible.

528.1 SANITARY SYSTEM (DRAIN, WASTE, VENT & FLUSHING)

The CONTR shall provide and install a Sanitary System to include drain, waste, vent, and flushing systems in accordance with Contract DWG D372-P6. The Sanitary System shall include one (1) 3000 gallon fiberglass sewage tank, Miller Plastic Products or approved equal (FR24-27 centerline); vent line to atmosphere; drain & fill lines. CONTR is responsible for the design and fabrication of the sewage tank foundation. Design and working drawings shall be submitted to MaineDOT for review and approval. Care shall be taken to maintain access to

propulsion shafting for maintenance. The system shall have one (1) suction pump-off station to a deck connection located at FR 23 inside the main deck bulwark port. The pump-off station shall be fitted with a USCG approved containment and pump-off connection with Cam-lock fitting and cap. The vent line shall terminate at the same location with a 4" Wager 1850 odor control vent check valve or approved equal. The sewage tank shall be fitted with a Gems sight glass level gauge or approved equal.

CONTR shall provide and install a sanitary lift station located below the crew flat for draining all fixtures below the flat and with pump for emptying the lift station to sewage tank. Lift station shall have capacity of approximately 70 gallons. Pump shall be a float switch-controlled Liberty Pumps 702/LE52A/A2, 208V, 1/2 HP, or approved equal. The lift station vent line shall terminate at FR29 port bulwark with a 4" Wager 1850 odor control vent check valve or approved equal.

Sea water shall be used for flushing. The flushing system will be pressurized by two Franklin Electric ejector pumps PRO (RM2) and a Wessels FXT 403 booster tank, or approved equal pressure set in accordance with the D372-P6 material list. System piping clean outs shall be as shown on DWG D372-P6.

The toilets shall drain to the Sewage Tank. Sewage piping runs including vents shall be sloped at least ¼ inch per foot in the fore and aft direction and ½ inch per foot in the transverse direction with minimum bends and elbows and shall have adequate cleanout connections so that the entire system is easily serviced.

For plumbing drains and grey water system, drain vents shall be installed from each fixture as needed to provide proper drainage using Studdor air admittance valves, or approved equal. Drain vent piping may be combined to service several fixtures where indicated on the plans. Lavatory drains shall lead from their served fixtures through deep P-type traps, discharging into the main system.

529.2 BILGE SLOPS (OILY WATER) SYSTEM

The Bilge Slops Tank receives product from suctioned bilges via the bilge manifold and Bilge Pump. Additionally, two (2) pneumatic dirty oil evacuation pump kits with hose and reel shall be provided as noted (Ref: DWG D372-P11). Discharge of the Bilge Slops tank is via vacuum truck at the Main Deck pump-off connection (Ref: DWG D372-P12).

533.1 POTABLE WATER SYSTEM

533.1.1 SYSTEM COMPONENTS

The CONTR shall provide and install (1) 4500 gallon 316 stainless steel Potable Water Tank (Hold Deck FR74-FR78) in accordance with the Contract DWG D372-P5. The Potable Water Tank will also serve as the Water Mist Supply Tank. In the top 2/3 of the tank, 3000 gallons will be accessible for house services. Suction piping for the Potable Water System will be connected at a level that will leave the bottom 1/3 of the tank unreachable. This will leave 1500 gallons of potable water available for the water mist fire suppression service. Suction for this system will come from near the bottom of the tank and will make the full capacity of the tank available for fire fighting. The Potable Water system shall include 316 stainless steel vent, fill, and supply lines, Main Deck fill station, inboard side of port superstructure FR80. The Main Deck fill station shall be 1-1/2" with cam lock fitting. The Potable Water System shall include two Franklin Electric ejector pumps PRO (RM2) and a Wessels FXT 402 booster tank; an Aqua Pure SS4 EPE 316L, or approved equal water filter, pressure gages; valves; two (2) Rheem point of use 2 Gal, or approved equal instant electric hot water heaters, two (2) Rheem point of use 6 Gal, or approved equal instant electric hot water heaters, and associated piping and fittings.

The Potable Water System services boiler feed; cooling make-up water hose bib with anti-siphon fitting in engine room; main deck hose bib with anti-siphon fitting (keep free from obstructing the car lane and escape route); passenger and crew vanities; crew break room sink, sink in Pilothouse, and rescue boat bib with anti-siphon fitting. (Ref: D372-P5). Piping exposed to weather will have provision for complete drainage.

Twelve (12) spare water filters shall be included with the vessel by CONTR.

551.0 COMPRESSED AIR SYSTEM

551.0.1 SYSTEM COMPONENTS

The CONTR shall provide and install a Compressed Air System which shall include two (2) Quincy Model QR310HP-2HP, or approved equal, air compressors tank mounted on two (2) 80 gallon x 200 PSI air receivers, located outboard between deep floors on the starboard side in the Auxiliary Engine Room. Piping, valves, fittings, and air connections shall be as called out on DWG D372-P10.

A main deck service air station to be located to the approval of MaineDOT and sea chest blow down air shall be installed and serviced by compressed air through a pressure reducer.

Compressed air shall be supplied through pressure reducers to the workshop in hold, to the diesel generator air starter, and to the battery room gas evacuating systems (see DWG D372-P10). Compressed air shall also be supplied through the pressure reducer to the Air Horn mounted on the Pilothouse top (See Section 421 and DWG D372-P10). The pneumatic pumps in the Auxiliary Engine Room and Engineer's Workshop also will be supplied with compressed air (See D372-P11).

555.1 FIRE EXTINGUISHING

555.1.1 NOVEC 1230 FIXED SYSTEMS

A USCG approved NOVEC 1230 fire suppression system shall be provided and installed for the engine room. The system shall include a manual release pull station, machinery shutdown switches, time delays, and alarms as required by USCG regulations. The CONTR shall engage the services of a manufacturer certified NOVEC 1230 Service Shop for detailed system design and shall engage the services of a manufacturer certified NOVEC 1230 Tech Rep for installation supervision of the fixed NOVEC 1230 systems. The CONTR shall provide the required drawings and documentation to USCG/MSD in order to receive approval of the system and its installation. Approved drawings and documentation shall be submitted to MaineDOT. The NOVEC 1230 cylinder storage area is located in the Hold Deck Auxiliary Engine Room, starboard side, FR 63.

The 02-Deck EDG Room will also be equipped with an NOVEC 1230 system with the NOVEC 1230 cylinder located in the dedicated fire suppression locker at FR 48 Port on the 02 deck. Similar design and service representation shall apply to the EDG Room installation as to the Engine Room installation with manual activation and automatic override.

CONTR shall mount all fixed agent cylinders on elevated foundations, securely fastened in a vertical position; secure cylinders individually to permit periodic maintenance; arrange nozzles to evenly distribute the clean agent throughout the protected spaces; and configure pressure switches to stop the ventilation supply and exhaust fans, close the fire dampers, and shut down all diesel-fired machinery upon release of the clean agent into the space protected.

555.1.2 PORTABLE EQUIPMENT

Portable fire extinguishers shall be provided and located in secure brackets in quantities and type categories as per the requirements of 46 CFR and review by MaineDOT. Any fire extinguisher bracket which is located on joiner panels shall be mounted with stand-offs to structure. Additional fire suppression equipment which may be required by USCG regulations shall be provided and properly secured or stowed (See Section 436.1 for Safety Equipment) at no cost to the MaineDOT. One BADGER 150 M 125 LB. semi-portable dry chemical fire extinguisher, or approved equal, shall be stowed in the port main deck island passageway at FR44 with labeled weatherproof soft cover.

555.1.3 SPRINKLER SYSTEM

The CONTR shall provide and install a Sprinkler Fire Suppression System in accordance with DWG D372-P8 and to the approval of USCG/MSD, the MaineDOT, and attending USCG OCMI. The systems shall include a Goulds 3796 (3"x3"), 13" impeller, 200 GPM @100 ft head, 15 HP @1800 RPM CD4MCuN self-priming centrifugal pump, or approved equal. An appropriate VFD motor controller shall be furnished by the pump vendor as recommended. Sprinkler system shall have a diverter valve and overboard discharge.

System materials shall be as shown on DWG D372-P8. Sprinkler piping material shall be copper nickel at all main deck locations. Copper Nickel pipe shall be used as far as practical in the Hold to the sprinkler manifold. CONTR shall use STI USCG approved WT/Fire Rated bulkhead penetrations where applicable.

Sprinkler coverage shall be Main Deck P&S FR29 to FR73 (under the 01 deck house) and the 01-Deck center FR38.5 to FR63 (under the 02 deck house). The System shall be a manual “dry” pipe system with open type sprinkler heads. All shall be to the approval of USCG/MSC, the attending USCG OCMI, and the MaineDOT. The Sprinkler System is designed to be a three (3) ZONE System with an auxiliary engine room located sprinkler pump and sprinkler manifold port near FR 65. Sprinkler manifold shall be constructed of 6” Sch 80 black pipe and hot dipped galvanized after fabrication.

555.1.4 FIRE, SMOKE, HEAT, & GAS DETECTION

CONTR shall provide and install a complete USCG-approved fire and smoke detection system as required by Subchapter H, Part 76. Spaces requiring detectors include propulsion machinery spaces, spaces with internal combustion engines of more than 50 hp, spaces with oil fired furnaces, battery rooms, emergency generator room, control spaces, and service spaces including the auxiliary engine room and the crew workshop area. Accommodation spaces require a manual alarm system connected to the pilot house panel. Fire detection locations shall be posted by the pilothouse panel.

CONTR shall provide each battery room and associated dedicated ventilation ducting with smoke, heat, gas detection. Particular gas detection requirements will be coordinated with Corvus ESS representatives. At a minimum, gas detection is required in each battery room, each off-gas vent pipe, and in each exhaust duct. Additional requirements may be required by the local OCMI. The shipyard is responsible for the vessel's safety plan and coordination with the local USCG officials.

555.1.5 WATER MIST FIRE SUPPRESSION

The CONTR shall provide and install a Water Mist Fire Suppression System in accordance with DWG D372-P5, D372-P9, and to the approval of USCG/MSC, the MaineDOT, and attending USCG OCMI. The water mist suppression system shall supply each of the two (2) port and starboard battery rooms via a dry pipe network in the battery room overhead. The systems shall include either an Ultra Fog P35 Pump station with high-pressure pumps type P35 & IP-54 electrical motor or a Hiller Water Mist Securiplex mist pump with electrical motor, or approved equal. Either system shall be furnished with appropriate filters, control cabinet, nozzles, alarm equipment, valves, piping, and material certificates.

The system shall have manual push button activation at the fumetight door to each battery room. Additional automatic activation sequencing shall be coordinated with pre-engineered CO₂ fire suppression system and have auto/manual mode selectors. While the vessel is unmanned, the fire suppression system(s) would be automatically discharged, if any two of the following are

detected: Ion gas, smoke or heat. The system would have a manual switch for daytime operations whereby the crew would engage the system if a failure was detected. The system shall meet the applicable USCG requirements, the Marine Chapter of NFPA 750 and ASTM F3353-19 Standard Guide for Shipboard Use of Lithium-Ion Batteries and be approved under USCG Approval #162.135.

The system shall be sized to provide a minimum of 30 minutes of fresh water supply to one battery room. Supply piping from the bilge system shall be connected as a backup for use only when PW supply has been exhausted. Activation of the fire system shall activate the supply and dampers only to that particular battery room, not both battery rooms simultaneously. Activation of the system shall initiate all required disconnects, alarms, and shutdowns required.

561.0 STEERING SYSTEM

The CONTR shall provide and install a steering system complete with recommended spares, by Jastram, B.C. Steering shall be Pilothouse controlled from the Steering Station on centerline forward and aft as well as from the outdoor starboard bridgeward station and from emergency stations in the forepeak and aftpeak steering compartments. Steering mode selector panels shall be provided with selectors for the active control station. The Steering Stations shall incorporate a rudder angle indicator and rudder command indicator. The arrangement of rudder angle indicator and rudder command indicator shall be to the approval of the MaineDOT. The forward/aft and starboard steering stations shall have both wheel follow-up (FFU) and jog lever non-follow-up (NFU) capability. The lazarette steering station shall have jog lever non-follow-up capability. The system shall be alarmed for pump failure and shall be capable of switching between the HPU pumps at each fore and aft rudder. Design is based on recommendations from Jastram including four (4) S-400-15 steel actuators with mounting pads, rod ends, self-aligning spherical bearings, adjustable vee-packing; four (4) 10 hp HPUs (2 per end), associated piping, valves, and controls; two (2) split hub tillers with cylinder pins, bushings, and fittings as shown in design drawings (Ref: DWG D372-M2-1, 2, 3).

The steering system design shall comply with Subchapter “H” and USCG MTN 01-09. Electrical power input is 240V, 3- phase. The rudders shall be capable of hard over 35 degrees to 30 degrees in 15 seconds at max speed of 14 knots.

The CONTR shall mount padeyes in order to secure steering for emergency. Padeye locations will be determined by CONTR and MaineDOT

The CONTR shall provide appropriately rated chain lever come-along-hoist to secure steering for emergencies and provide mounted storage at each station.

Piping for steering system shall be run from each set of two pumps, inboard of beam/5 from sideshell and separated as much as possible from each other. CONTR shall supply all piping, hoses, hangers, hydraulic oil, and accessories as specified in the vendor drawings. Hydraulic

pipng under 2000 psi shall be 304 stainless seamless sch 40. The electrical wiring for steering control shall be similarly run separately for the four power units to pilothouse.

A complete description of the Steering System shall be generated by the vendor and provided for submittal to USCG/MS. Documentation shall include a Design Verification Test Procedure (DVTP) and Periodic Safety Test Procedure (PSTP). The CONTR shall engage a Jastram Tech Rep for steering systems commissioning tests and trials. CONTR shall post a laminated diagram along with the laminated emergency steering procedures in the lazarette.

The upper rudder stocks are 10-1/4" diameter US-sourced stainless steel Aqualoy 22 by Western Branch Metals or approved equal. The lower rudder stocks are 10-1/4" diameter US-sourced mild steel.

561.0.1 STEERING SYSTEM SPARES

The CONTR shall provide the recommended spare parts for the steering system. Spare parts shall be labeled and crated for storage. Storage shall be at the direction of the MaineDOT either direct shipped to an MaineDOT warehouse or placed on the vessel.

568.1 MANEUVERING & CONTROL SYSTEM

Propulsion controls shall be by ABB, provided as part of the integrator propulsion system. The vendor shall be responsible to provide USCG/MS with a complete description of the Maneuvering and Control System (via the CONTR). This shall include a DVTP and PSTP document. The CONTR shall engage a Tech Rep for control system commissioning tests and trials.

573.6 VEHICLE TIE DOWNS

The CONTR shall provide and install a vehicle tie down system for the center truck lane and submit documentation prior to installation to MaineDOT.

573.6.1 TIE-DOWN SOCKETS

The CONTR shall provide and install forty (40) main deck tie-down sockets in locations shown on D372-S7-1 and as designated by MaineDOT. The system shall consist of deck sockets formed of 8" Sch. 80 pipe caps, with 1" round bar attachment points, all continuously welded all around to the approval of MaineDOT and attending USCG OCMI. Pipe caps shall be fitted as flush as possible to main deck plate top surface.

573.6.2 TIE-DOWN CHAIN, BINDERS

The CONTR shall provide (40) sets of 3/8" Grade 80 tie down chain assemblies 15' long with 3/8" hooks at each end and (40) ratchet type 3/8" chain binders. Storage for the assemblies shall be provided on steel flat bar or angle in the starboard deck locker mounted to the bulkhead to the approval of MaineDOT.

581.1 GROUND TACKLE

The CONTR shall provide and install an anchoring system consisting of the following components in accordance with DWG D372-M4:

- A bulwark anchor "pocket" main deck starboard FR10
- Anchor 750# Baldt workboat type or approved equal
- Chain 32 ft. of 1" Grade 1 stud link, galvanized, stowed in FR28-FR16 Void Compartment
- Chain rode tray 48"x30" starboard side hull void space
- Line 235 ft., 1-1/2" inch Samson Ultra Blue 12 plaited rope or approved equal
- Anchor release lever mechanism (DWG D372-M4)
- Hawse pipe starboard side as far outboard as possible to avoid vehicle impact
- Anchor rode retrieval drum, Schoellhorn-Albrecht 5" rope circumference hawser reel deck mount model SHR-5-24-24-AL, or approved equal starboard side hull void space as far outboard as possible to avoid vehicle impact
- (1 set) Shackles, swivel, thimbles, required and to the approval of the MaineDOT

Anchor stowage materials shall be 316 stainless steel.

582.1 MOORING SYSTEM

The CONTR shall provide and install, as appropriate, the following equipment:

582.1.1 LINES

(6) 50-foot (including eye splice) poly-Dacron dock lines, 1-1/4 inch diameter (18,750# avg. tensile strength), each with a 30-inch eye splice in one end.

582.1.2 KEVELS (CLEATS)

The CONTR shall provide and install mooring cleats and bulwark fairlead chocks to adequately moor the vessel for bow and stern loading and for side to pier docking. The CONTR shall provide and install (13) 24" kevels in locations as shown on DWG D372-A12. There shall be kevels on each side, (7) port and (6) starboard. Each kevel shall have an associated fairlead chock (4" Schedule 80 hawse pipe) located to the approval of the MaineDOT to provide adequate line leads from the chock to the kevel.

The CONTR shall provide and install line hooks on the bulwarks in (5) places – P&S bow and stern to hang mooring lines on, Port FR12 for anchor chain. These shall be flat bars shaped to

accommodate the mooring lines – two hooks spaced appropriately at each of (12) mooring stations. Hooks and locations shall be to the approval of the MaineDOT.

582.1.3 BULWARK SERVICE GATES

The CONTR shall provide and install (6) hinged bulwark service gates in accordance with the locations and details of DWG D372-A12.

582.2 PIPING SYSTEM TESTS

The Contractor shall complete hydrostatic leak tests of all fluid and air piping systems in accordance with regulatory requirements. Hydrostatic tests shall be completed prior to operational tests of pumps, piping, and valves, to prove the integrity of the piping and valves in the system. Perform hydrostatic tests before applying piping insulation. Test each system when complete in its entirety to 1.5 times the design operating pressure or otherwise noted. A predetermined test time period will be agreed upon with MaineDOT and USCG where applicable.

Manually operate all valves from stop to stop to demonstrate free operation without binding. Remote valve operators (reach rods, hydraulically actuated quick closing devices, etc.) shall be tested to demonstrate proper operation. Demonstrate that all relief valves and pressure safety devices operate at their set pressure or provide current test certification. CONTR shall submit all pressure gauges with lab calibration test and certification stickers along with certifying documents. Valve identification tags shall be checked for accuracy. CONTR shall be responsible for documenting testing/verification and submitting to MaineDOT. Inspect all welds, screwed connections, and takedowns for leakage. Acceptance criteria shall be zero leakage.

Manually operate all ventilation system balancing dampers and fire dampers to demonstrate free operation without binding. Check ventilation system filters for proper installation and cleanliness prior to system operation. CONTR shall be responsible for documenting testing/verification and submitting to MaineDOT.

583.1 RESCUE BOAT & DAVIT

583.1.1: DAVIT: The CONTR shall provide and install a Coastal Marine Equipment, Inc. D50-14.75-11-24 (240V, 3-phase), or approved equal davit on the 02-Deck starboard side (Ref. D372-A1-2 and D372-M5). The CONTR shall note that the Coastal davit pedestal will not be provided with side gussets. The CONTR shall be responsible for fabricating and installing (8) gussets on the pedestal. Handing of davit as shown on plans. CONTR shall submit working drawings to MaineDOT prior to installation.

583.1.2: RESCUE BOAT: The CONTR shall provide and install a new Palfinger RSQ 450 Rescue Boat, or approved equal rescue boat with jockey seat, electric start, boat cover

and motor cover, and (50) HP gasoline outboard motor. Vessel name and hailing port to be stenciled on rescue boat.

- 583.1.3: The CONTR shall provide and install a new rescue boat battery charger. The charger shall be a Pro SE, Sportsman Edition, or approved equal and shall be located in a position to be accessible to the rescue boat motor starting battery. Locate battery charger power to an appropriate source.
- 583.1.4: The CONTR shall provide and install aluminum cradle chocks, Scully Fabrication, or approved equal. The Scully cradle shall be ordered for the boat with the motor stored in a vertical position. CONTR to provide cleats on life raft cradle. Cradle is to be positioned such that the rescue boat bow is higher than the stern and will naturally drain itself.
- 583.1.5: Dedicated floodlights for prep and launch illumination shall be provided and installed in accordance with Section 331.1.9.2.
- 583.1.6: CONTR to provide a rescue boat gear locker Libra OL Series GRP or approved equal white locker with hinged door located in accordance with DWG D372-A1.
- 583.1.7: TESTS: The installation shall be fully operational in radius swing and clearances past the rails. The davit and boat shall be weight tested and operationally tested to the approval of the MaineDOT and the attending USCG OCMI.

584.0 VEHICLE GATES

The CONTR shall build and install a chain link and safety netting vehicle gate across the opening in the forward and aft deck bulwarks. CONTR shall submit working drawings to USCG and MaineDOT for approval prior to ordering. The gate shall be constructed of one course of yellow colored, rubber-coated ½” Grade 30 chain attached to (1) 2” SCH 40 vertical pipe stanchion on centerline as shown in DWG D372-A12. Netting shall attach to side bulwarks and vertical stanchion. Netting shall be US Netting or approved equal 2” black polyester webbing, 12,000 lb tensile strength, 2” wide perimeter strap, 4”x4” square mesh openings, (1) 3” ID D-Ring top center, (4) straps with sewn in SS Snap hooks and cam buckles on each strap 44” tall both sides. Net dimensions are 44” height x 13’-8” width not including straps and hardware. Stanchions mount in 3” SCH 160 stainless steel deck socket 6” minimum depth near FR1 and FR 101. An additional 3” SCH 160 stainless steel deck socket shall be provided at the bulwark starboard FR1.5 & FR100.5 for stowage of the vertical pipe stanchion during loading and unloading.

585.0 LIMITED USE LIMITED APPLICATION ELEVATOR

The CONTR shall provide and install a Gillespie Limited Use Limited Application (LU/LA) type elevator designed per ANSI/ASME A17.1 Safety Code for Elevators and Escalators at the location shown on the DWGS FR51 starboard side. This elevator will service the Main, 01, and 02 decks. The CONTR shall be responsible for all structural requirements for the installation including labor and materials. The CONTR shall engage the third party to inspect the elevator before delivery. The CONTR shall engage a Tech Rep who is certified by Gillespie to supervise the installation. The CONTR shall also engage a third-party certified elevator inspector to inspect the elevator installation and provide an operating certificate. The CONTR shall be responsible for the installation and operation of all alarms, safety devices, and ancillary equipment to provide the vessel with a complete operating system.

A hands-free communications system from the elevator car to the Pilothouse shall be provided and installed. System shall be powered by 4 hour UPS system in elevator cab along with cab light. Emergency 'stop' button and 'help' buttons shall be provided in the elevator cab.

The elevator system shall be performance tested to the satisfaction of the MaineDOT and third-party inspector and shall follow all the Manufacturer's recommendations for installation. The system shall be installed to meet ASME 17.1-2007 Safety Code for Elevators and Escalators as applicable for a LU/LA type elevator (Part 5.2) and according to 46 CFR Part 120.540.

Service use of the elevator prior to Contract completion shall not be permitted. When testing is complete, the elevator shall be de-energized to prevent casual use until just preceding dock trials. The CONTR and third-party inspector shall generate a test procedure for the approval of the MaineDOT and conduct testing in the presence of MaineDOT, and USCG OCMI.

CONTR to supply to following including but not limited to:

- Fused disconnect switch.
- Hoistway conduit for shaftway wiring, shaftway wiring, and traveling cable.
- Hydraulic piping, adapters, oil, and filters.
- Finish cab flooring, fasteners, or fillers per specs.
- Grout and building materials.
- Any finish painting on frame and hardware.
- Rail bracket support columns if required by wall construction.
- Smoke detector, sill supports, fire signs, rail backing if required, wall inserts or rail bracket wall anchors.

585.0.2.1 SPECIFICS

The LU/LA shall be complete with hydraulic power unit and cylinder, car frame and platform, A-Class hoistway doors (weathertight on Main and 02 Decks), accordion panel car gate, door interlocks, controller, car and hall fixtures, cartop inspection station, guide rails, rail brackets, pit bumpers, shaftway switches, hardware and accessories as required. Hoistway shall be equipped with devices at top and bottom to provide for alternative top and bottom car clearances. Hoistway

shall be provided with permanently installed lighting at top and bottom. All shaftway switches, hall and car stations, and electrical devices to be NEMA 4X unless otherwise indicated. Controller enclosure shall be NEMA 4. All controls exposed to weather, shall be contained in a weather tight enclosure.

The elevator shall be provided with a hoistway, and entrances including door frames, sills, hangers, tracks, closers, vision panels, and all required hardware. It shall be designed and installed to meet, so far as practical, the proposed ADA Passenger Vessel Guidelines Part V408. This requirement shall be met, so far as practical, for the elevator itself and for entrance ramps and access features.

The entrance doors, Main Deck, 01-Deck, and 02-Deck shall be hinged, self-closing, with ADA hardware installed. ADA ramps shall be installed as required. The Main Deck and 02-Deck doors shall be weathertight. The 01-Deck door shall be an A-Class joiner door. Door operating forces shall be as required by the ADAAG, or USCG requirements if that should prevail. The main deck and 02-Deck controls shall have a protective covering to shield electronics from sprinkler system and weather.

The interior elevator cab entrance shall be fitted with a sliding accordion gate fitted with ADA-accessible hardware.

Elevator Type	LULA	Travel	27'-0"
Rated Load (lbs)	1400	Stops	3 stop front
Class Loading	Wheelchair	Car Door	folding panel gate
Speed (fpm)	30	Overhead	9'-0"
Platform Size	3'-9"x5'-0"	Jack Type	roped 2:1
Cab Clear	3'-6"x4'-5 1/2"	Runby	3"
Car Weight (lbs)	1400	Sill Clear	1"
Voltage	208/3/60	Shaftway Clear	4'-3"x6'-3"
Horsepower	5	Pit	8"

Components and/or assemblies supplied as follows by Gillespie:

- Model PHRH-1-CL – Gillespie Corporation, 34 Pine St., Ware, Ma. 01082 (413) 967-4980.
- One single-stage hydraulic cylinder roped 2:1 to car including pipe rupture valve.

- One hydraulic power unit with submerged pump and motor, low oil level switch, four solenoid control valve with soft start and soft stop, to be located in motor room. Power unit tank to be gasketed for sea-worthiness. Oil filter by others.
- All equipment for 2:1 roping including sheave, (3) 3/8" wire ropes, rail guided sheave carriage, wedge type shackles, equalizer springs, etc.
- One structural steel cantilever car frame with nylon gibbed guide shoes.
- Type A instantaneous broken rope safeties mounted to car frame, with hardened steel wedges to grip rails on activation.
- One car platform including channel frame with stainless steel plate.
- One elevator cab including plain bent stainless steel panels, clear anodized aluminum collapsible folding panel gate with NEMA 4 switch, stainless handrail on side wall, fluorescent light fixture UL listed for wet locations, stainless steel canopy panel, no ceiling. Cab to have hinged and lockable access panels for shaftway switch adjustment.
- Car fixtures including NEMA 4X car operating panel with illuminated floor buttons, stainless steel faceplate, stainless steel box, alarm button, emergency off button, emergency light, NEMA 4 hands free emergency phone, faceplate to be engraved with capacity and company name.
- Hall fixtures including NEMA 4X stainless steel enclosures, stainless steel faceplates and buttons, call buttons for automatic operation.
- NEMA 4X inspect station with up/down buttons, run switch, light switch, fire service buzzer and jewel, GFCI.
- One UL-labeled microprocessor controller designed for selective-collective operation in NEMA 4 enclosure, with tape selector/positioning system, to be located in motor room.
- Alternative means for bottom car clearance for LU/LA elevators.
- Alternative means for top car clearance for LU/LA elevators.
- Two rubber bumpers.
- All necessary NEMA 4 shaftway switches.
- Guide rails, rail brackets, clips, and bolts.
- Three gasketed weather resistant hollow metal single swing hoistway doors 3'-0"x6'-8", with 5" x 16" vision panels, closers, door knobs, hardware, with electro-mechanical weather resistant door interlocks. Doors to be from Dean Steel, or approved equal in 316SS.
- All structural steel painted with Sherwin Williams Marine Industrial Enamel, or approved equal including car frame, rail brackets, pit steel, etc.
- Drawings for approval.

- Installation manuals.

585.0.2.2 ELEVATOR CAR

The elevator car bulkhead linings shall be 304 brushed stainless steel. The ceiling shall be 304 brushed stainless. The cab floor shall be 304 plain stainless steel. Handrails and car sill shall be 304 stainless steel. Any mild steel in the elevator cab shall be shop-painted before delivery to shipyard.

585.0.2.3 INSPECTIONS AND TESTS

The elevator and all components shall be inspected by the third-party inspector and tested under the supervision of the Manufacturer's Tech Rep and to the approval of the MaineDOT and the attending USCG OCMI.

585.0.2.4 SPARES

The CONTR shall provide elevator spare parts in accordance with the manufacturer's recommended spare parts list.

SWBS SECTION 600 MARKINGS, ACCESS, & OUTFITTING

The following specifications and drawings referenced provide for Furnishings, Coatings, and Joiner work items required to be performed by this Contract:

- 600.1 REFERENCE DRAWINGS
- 602.1 SIGNAGE & MARKINGS
- 611.1 HULL FITTINGS
- 612.1 RAILS & STANCHIONS
- 622.1 FLOOR PLATES, GUARDS
- 623.1 LADDERS, STAIRS, ADA RAMPS
- 625.1 WINDOWS
- 631.1 COATINGS
- 631.2 SAMPLE COATING SCHEDULE
- 633.1 CATHODIC PROTECTION
- 634.1 INTERIOR DECK COVERINGS
- 634.2 EXTERIOR DECK COVERINGS
- 644.0 SANITARY SPACES & FIXTURES
- 645.1 PASSENGER, CREW & PILOTHOUSE SPACES
- 654.1 UTILITY SPACES

600.1 REFERENCE DRAWINGS

D372-A1	GENERAL ARRANGEMENTS
D372-A3	OUTBOARD PROFILE
D372-A7	DOOR & WINDOW SCHEDULE
D372-A10	PILOTHOUSE ARRANGEMENT
D372-A12	BULWARK & MOORING ARRGTs & DETAILS

602.1 SIGNAGE & MARKINGS

602.1.1 GENERAL

The CONTR shall provide and install all USCG required internal and external signage and markings. Access/Braille signage shall comply with 521 CMR 41.00. Additional signage will be provided as required by these Specifications. All valves, switches, breakers, panels etc. to be marked and labeled in accordance with ASTM F1166 Section 15, Standard Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities.

602.1.2 REGULATORY MARKINGS

The following letters and numbers will be welded on and painted in contrasting color, sized in accordance with USCG regulations 46 CFR and positioned to the approval of MaineDOT:

- Vessel Name: "George J. Mitchell" – Bow P&S Bulwark; Stern P&S Bulwark
- Hailing Port: "Rockland, ME" - Beneath vessel name on bulwark port forward, starboard aft
- Name Boards: Mounted P&S on Pilothouse deck railings near pilothouse doors (Ref: DWG D372-A13). Mahogany boards, carved letters painted yellow gold, boards finished with clear marine epoxy.
- Draft marks: FR8 and FR94 P&S (4 sets) – Numbers 10, 9, 8 in four locations. Exact frame locations to the approval of the MaineDOT.
- Official Number: The Official Documentation Number shall be welded to a transverse hull structure in accordance with 46 CFR and located to the approval of the MaineDOT.

602.1.3 SAFETY & WARNING SIGNS

Signage for keeping off stairways during docking, no smoking, exits, general warnings, PFD stowage and access, lane height clearances, etc. shall be designated by the MaineDOT and shall be in compliance with USCG CFR requirements.

602.1.4 BUILDER'S PLAQUE

A bronze, engraved Builder's Plaque will be provided and installed in either the port or starboard 01-Deck passenger cabin in a location as approved by the MaineDOT. At a minimum, the Builder's Plaque shall identify the vessel Name, Builder, Designer, Owner, and delivery year.

602.1.5 NAMESAKE PLAQUE

A bronze, engraved Namesake Plaque will be provided and installed in either the port or starboard 01-Deck passenger cabin in a location as approved by the MaineDOT. At a minimum, the Namesake Plaque shall identify the Name, brief history, and reason for naming.

611.1 HULL FITTINGS

611.1.1 DOORS, EXTERIOR WEATHER-TIGHT

Exterior marine weather-tight doors will be North American manufacture Fabtek, Dean Steel, Freeman Marine, Pacific Coast Marine, Beclawat, or approved equal. Doors shall meet the 46 CFR fire code requirements of the space to which they serve. Doors shall be "bolt-in" frame type. All doors shall be steel, stainless steel, or aluminum as appropriate for the installation and as shown on the Contract DWGS. All weather facing doors to be 316 stainless steel, inclusive of September 12, 2024

frames, and hardware. The stainless-steel doors and frames are to have a powder coated finish. All weather facing doors shall match the exterior paint schedule they are attached to. This includes elevator doors at all levels. Doors and frames shall be painted by CONTR per MaineDOT preference. Door sill heights shall be no greater than as required by the ADA Guidelines, or as required by USCG downflooding and stability requirements. Exterior doors not insulated with mineral wool shall be filled with fiberglass thermal insulation. Doors shall be protected from other construction activity to prevent damage or contamination of surfaces.

Doors shall be handed as per DWG D372-A7. Hardware, lights, and special features shall be as described on D372-A7. A general reference list of WEATHER-TIGHT doors follows:

- Pilothouse weather-tight: (1) each P&S (fitted with holdbacks in 2 positions)
- 02-Deck weather tight: EDG Room FR47; Stairway starboard FR60.5; Stairway Port FR41; Crew Access Starboard FR54; Crew Access Port FR54; Wheelchair lift starboard FR52; Fire Suppression Locker Port FR 48
- 01-Deck Port weather tight: Stairways FR43 & FR60.5;
- 01-Deck Starboard weather tight: Stairways FR43 & FR61;
- Main Deck Port superstructure: Passenger Stair FR32; Crew Space Access FR41.5; Escape Trunk FR34, Deck Locker Fr 25.5
- Main Deck Starboard superstructure: Wheelchair lift FR52; Deck Locker FR59; Engine Room Access FR46; Auxiliary Engine Room access FR60.5

All doors accessible to passengers shall be fitted with finger guard protectors at the hinges. Doors opening against bulkheads shall be fitted with rubber bumpers.

611.1.2 DOORS, INTERIOR JOINER

Interior joiner doors shall be North American manufacture Fabtek, Dean Steel, Freeman Marine, Pacific Coast Marine, Beclawat, or approved equal. Doors shall meet the 46 CFR fire code requirements of the space to which they serve, including internal insulation. Doors shall be “bolt-in” frame type. All doors shall be stainless steel, for the installation and as shown on the Contract DWGS. Doors and frames shall be painted by CONTR per MaineDOT preference. The clear opening tops of doors shall, in general, be not less than 6’-8” above the finished deck (Ref: D372-A7). Door sill heights in passenger areas shall be no greater than as required by the ADA Guidelines or USCG regulations. Self-closing door opening force shall not exceed ADA Guidelines or as required by USCG Regulations. Doors shall be fitted with magnetic hold backs with adjacent release switches under cover. CONTR to supply and install wiring and hardware for 24 V DC door holders. Magnetic hold backs shall be incorporated into safety shutdown system in passenger cabin stairway doors to release automatically.

Doors shall be handed as per DWG D372-A7. Hardware, lights, and special features shall be as described on D372-A7. A general reference list of JOINER doors follows:

- 02-Deck: Crew head FR53
- 01-Deck Port: Cleaning Gear Locker FR48; Passenger Head FR53; Passenger Head FR57; PDF Locker FR69
- 01-Deck Starboard: PFD Locker FR33; Passenger Head FR46; Wheelchair Lift FR52
- Hold Deck: Crew Head Port FR 36; Workshop Sliding Door FR36; Crew Break Room FR38;
- Engine Room – Acoustic EOS FR44

All doors accessible to passengers shall be fitted with finger guard protectors at the hinges. Doors opening against bulkheads shall be fitted with rubber bumpers.

611.1.3 ENGINE ROOM WATERTIGHT DOORS

CONTR shall provide and install Class I hinged, watertight door on forward engine room bulkhead FR 40 and aft engine room bulkhead FR62 (Ref: D372-A7). Doors shall be stainless steel, with clear opening dimensions of 66"x30". Doors shall be equipped with quick-acting wheel operation both sides. Doors shall have local and pilothouse audible and visual alarms for open status. Doors shall be by Cen-Tex or approved equal. Doors shall meet all U.S. Coast Guard requirements for subdivision bulkhead watertight door.

611.1.4 BATTERY ROOM FUMETIGHT DOORS

CONTR shall provide and install A-60 hinged, gas-tight door on aft port battery room bulkhead FR 48 and forward starboard battery room bulkhead FR54 (Ref: D372-A7). Doors shall be stainless steel, with clear opening dimensions of 78" x 28". Doors shall be equipped with grab handle on both sides. Doors shall have local and pilothouse audible and visual alarms for open status. Doors shall be Staco A60WE-2 or approved equal. Gas-tight door shall have continuous gasket where it contacts the door frame and 2 individually activated dogs to maintain gas tight integrity.

612.1 RAILS & STANCHIONS

612.1.1 EXTERIOR RAILINGS

The CONTR shall provide and install welded steel pipe handrails and stanchions to meet 46 CFR requirements (Ref: D372-S12). Handrails shall be provided and installed around all perimeters of the 02 weather deck areas including 02-Deck inboard/forward/aft of the IBA storage racks, rapid charging receptacle, and rescue boat storage/launch area. These pipe handrails shall be fitted with welded tabs and bolt-on stainless screen sections (See Section 612.1.2 below). CONTR shall provide and install (2) removable stanchions, 30" high, 1 1/2" schedule 40 pipe,

outboard of each inflatable buoyant apparatus on 02 Deck. The CONTR shall provide and install (6) hinged railing service gates in accordance with the locations and details of DWG D372-S12. Gates at IBAs span 6'-0" width, gates elsewhere are 30" width in the style of the adjacent railings. Each gate is to be fitted with gate bolt and lock assembly.

Perimeter exterior rails in way of passenger and crew accessible areas shall be of the following approximate dimensions.

1. Top course, and stanchions: 2" Schedule 40 pipe
2. Lower course: 1-1/2" Schedule 40 pipe
3. Second and third courses (crew): 1-1/2" Schedule 40 pipe
4. Deck to top of top course = 40"
5. Spacing of intermediate courses as shown on plans
6. Deck to bottom of bottom course = no greater than 6" (passenger areas)
7. Deck to bottom of bottom course = no greater than 9" (crew areas)
8. All passenger accessible openings are to be fitted with stainless steel screen panels

Rails forward of the bridge wings and around the front of the pilothouse where passengers do NOT have accessibility shall not be fitted with screening.

Rail installations shall be in accordance with D372-S12 and shall in general be:

- 02-Deck: Passenger Access -- two courses & screens
- 02-Deck: Crew Only Access -- four courses; no screening panels

Pilothouse top shall be fitted with six attachment padeyes for crew to clip safety lines into when working on housetop. Aft end of pilothouse shall be fitted with tag line system for crew to clip safety lines into when working on lower housetop.

CONTR shall make all handrails leading below deck removeable.

612.1.2 SAFETY FENCING

The CONTR shall provide and install stainless steel safety screen panels on perimeter rails on the 02 deck. Screens shall be McNichols or approved equal, woven 316 stainless steel lock crimp 2" square, 0.25" wire diameter (2-3/4 ga.) and must be approved by MaineDOT.

612.1.3 INTERIOR RAILS

"Sea Rails" shall be provided and installed in accordance with the requirements of the CFR, ADAAG, and to the approval of the USCG in the 01-Deck passenger spaces P&S. Additional railings are required in the Auxiliary Engine Room and Crew Workshop in way of changes in the flat elevations including protective railings in way of propulsion machinery. The CONTR shall allow for 100 linear feet of sea rail installation to be allocated at the direction of the MaineDOT and to the approval of the attending USCG OCMI. Interior sea rails shall be mild steel.

Hand rails that are affected by new joiner panels, joiner sheathing, or insulation shall be adjusted to be clear of such installations providing sufficient hand clearance. This may require lengthening

or otherwise modifying existing hand rail brackets and supports. The CONTR is responsible for this work. All interior hand rails shall be securely fastened back to structure to the approval of the MaineDOT. Fastening to soft core joiner panels alone is not sufficient.

622.1 FLOOR PLATES, GUARDS

622.1.1 FLOOR PLATES

The CONTR shall provide and install patterned steel floor plate (3/16" diamond plate, or approved equal) in the engine room, auxiliary engine room, and crew workshop. Steering gear flats, tank voids, at the bottom of all vertical ladders, and void spaces where there is equipment which must be periodically inspected or serviced shall be provided with catwalks and side handrails to provide safe passage. Catwalks shall be installed, as shown on Dwg. D372-A1-1, with framed steel diamond plate base, angle supports and handrails on both sides. CONTR shall submit working drawings to MaineDOT prior to ordering. Where regular access to valves or cable may be required, the floor plate shall be hinged to provide easy access. Floor plates shall be framed to provide sufficient space for operation of all valves and controls and may not block gauges or filters. Hinged floor plates shall have holdback mounted as necessary to prevent from falling on the operator.

622.1.2 GUARDS

Guards shall be installed in way of exposed shafting, other rotating machinery, and exposed hot pipes as appropriate to protect personnel. Portable plates with flush type grabs and hinges will be provided for access to valves, strainers, etc. below the floor plates. Coaming bars will be fitted around permanent openings. CONTR shall submit working drawings/design of guards and coamings to MaineDOT prior to ordering.

623.1 LADDERS, STAIRS & ADA RAMPS

623.1.1 VERTICAL LADDERS

The CONTR shall provide and install vertical ladders in way of access and escape hatches, and for access to the top of the pilothouse. Handholds will be installed as required to aid personnel access. Steel diamond plate platforms shall be installed at the bottom of all vertical ladders in the Hold. Platforms 24"x 24" minimum, and arranged to provide a secure standing surface as well as for collection of road salt liquid dripping down and collecting in corners of bottom plate, stiffeners, etc. (See 622.1.1). Vertical ladders shall be no narrower than 16", have no obstructions behind centerlines of rungs closer than 7", and rungs shall be spaced no more than 12" apart. Ladders shall meet USCG regulations for Subchapter K passenger vessels (46 CFR 116.438).

623.1.2 INCLINED STAIRS

The CONTR shall provide and install inclined stairs leading from the Main Deck to the Engine Room, Crew Break Room, Auxiliary Engine Room, 01-Deck, 02-Deck, and Pilothouse. Particular attention shall be paid to the maintenance of adequate headroom on stairways. Stairways shall be fitted with railings and stanchions to comply with USCG regulations and ADA Guidelines as applicable. Each stair riser in a stairway run shall measure vertically **exactly** equal to all other risers in that stair run. The CONTR shall ship check and confirm this requirement first with approval from MaineDOT. All inclined stairs, interior and exterior (with exception of exterior pilothouse stairs) shall be fitted with Wooster Products Stairmaster Type 500 non-skid safety treads or approved equal (See 634.1.5). Interior and Exterior passenger access stair rails shall comply with ADA Guidelines including rail extensions top and bottom (See ADAAG V503.10.2 and V503.10.3). Stairways and associated railings to the hold compartments shall have provision for complete removal.

625.1 WINDOWS

625.1.1 PILOTHOUSE WINDOWS

The Pilothouse windows shall be clear, tempered Pacific Coast Marine, Beclawat, or approved equal, with aluminum clamp-ring frames. CONTR to provide and install pilothouse windows (13 total), ten of which shall be electrically heated (30Watts/ft. sq.). Forward and Aft facing windows shall be installed on a slant (top forward) to limit reflection. All aluminum frame windows shall be installed with fire clips to satisfy 46 CFR requirements.

The CONTR shall provide and install heavy-duty Hepworth, Cornell-Carr, or approved equal, electric marine window wipers with washer fluid feature on (6) Pilothouse windows forward and aft. Individual console-mounted switches at each console shall control On/Off/Intermittent wiper functions (Ref: DWGS D372-A7 and D372-A10).

All pilothouse windows shall be fitted with Sola-Cure Anti-Glare film shades or approved equal.

625.1.2 01- DECK WINDOWS

The CONTR shall provide and install fixed and sliding windows in the P&S 01-Deck passenger spaces (Ref: D372-A7). They shall be Beclawat, Pacific Coast Marine, FabTek, (or approved equal), aluminum, clamp-ring frame, with tinted tempered thermopane glass. All aluminum frame windows shall be installed with fire clips to satisfy 46 CFR requirements. Sliding windows shall be fitted with locking devices to prevent windows from opening more than 5 inches. Windows below IBAs and Rescue Boat shall have fire rated T glass.

625.1.3 EOS WINDOWS

The CONTR shall provide and install fixed A-60 windows in the aft EOS bulkhead (Ref: D372-A7). They shall be Dean Steel, Ship Interior Systems (or approved equal) steel external frame with fire rated laminated glazing; external frame can be welded or bolted. A-60 windows approved under USCG Approval #164.137.

631.1 COATINGS

631.1.1 REFERENCES

1. PPG Paint
2. ASTM D 4541-89 - Standard Test Method for Pull-Off Strength of Coatings Using a Portable Adhesion Tester.
3. MaineDOT Standard Specification 506 – Shop Applied Protective Coating - Steel
4. ASTM D 4138-88 - Standard Test Method for Measurement of Dry Film Thickness of Protective Coating Systems by Destructive Means.
5. ASTM D 4414 – 90 Standard Practice for Measurement of Wet Film Thickness by (ISO-8502-3) Notch.

631.1.2 GENERAL SCOPE

Specifically reference MaineDOT Standard Specifications Sections 506.01, 506.02, 506.03, 506.05, 506.06, 506.09, 506.13 as applicable, 506.14, 506.15, and 506.16.

The CONTR shall apply a high-quality commercial marine paint system, PPG Inc., or approved equal. All paint used in a given coating system shall be from the same manufacturer unless otherwise specified by MaineDOT and/or approved by the manufacturer. All material shall be new and supplied in clearly marked and sealed containers. Prior to the commencement of coating applications, the CONTR shall provide MaineDOT with a Coating QC plan per MaineDOT Standard Specifications Section 106 Quality. The Coating QC plan should include at a minimum a detailed coating schedule for surface preparation and application of the coating system. The Coatings QC Plan shall be reviewed and approved by the MaineDOT and shall be in compliance with the paint manufacturer's application and warranty requirements.

CONTR shall hold a current shop NACE NIICAP, or SSPC- QP3 certification or another coatings certification as approved by the State of Maine Fabrication Engineer.

To ensure good coating performance, all work that will affect the exterior of the vessel envelope (hull, decks, deckhouses, tops, etc.) and items of outfit (mast, deck fittings, above deck piping, etc.) shall be completed before surface preparation for coating. This includes welding, burning, flame straightening, grinding and drilling. Preparation of edges, welds, scars, etc. shall be in accordance with the "Hull and Deckhouse Structure part of these Specifications.

Coatings shall be applied in strict conformity to the manufacturer's instructions, including surface preparation. The CONTR shall not thin or alter coatings without approval of the MaineDOT. Where more than one coat is specified, subsequent coats shall not be applied until the preceding coat is dry per manufacturer's Specifications. Coatings shall not be applied to wet surfaces nor during rainy or damp weather without approval of the Paint Manufacturer's and MaineDOT in each case. Where multiple coats of primer or stripe coats are specified, successive coats shall be of differing colors to distinguish them. Varnished work shall be sanded between coats.

Where not otherwise specified, all parts and spaces which are normally painted shall be cleaned and painted to conform to the surroundings or to comparable parts or spaces. All fixtures, deck and bulkhead coverings, wires and associated electrical equipment, label plates, gauges, thermometers, etc., shall be protected during coating operations. Upon completion of the work, all paint, including overspray and smudges shall be removed and the fixtures and equipment restored to their original condition.

Welds in spaces required to be tested shall be clean and paint-free until after the completion of such tests.

Draft marks, load-line marks, name and hailing port, and safety markings shall be specially coated.

Coating work, except touchup, shall be accomplished under the supervision of the paint manufacturer's representative who will approve surface preparation, acceptable atmospheric conditions, and coating application.

Runs, overspray, roughness and signs of improper applications shall be repaired or recoated at the CONTR's expense.

Any surfaces, including machinery and equipment, which become damaged or soiled shall be cleaned or repaired prior to delivery.

631.1.3 INSPECTIONS

Specifically reference MaineDOT Standard Specifications Sections 506.05 and 506.09.

Acceptance of coatings shall be by the MaineDOT as areas are presented for inspection. Construction primer need not be removed provided it is compatible with the paint system specified. The CONTR shall arrange for the Paint Manufacturer's Tech Rep to be present to the degree required by the Paint Manufacturer to ascertain that the warranties on all major coating applications are enforceable.

The coating systems QC plan are to be agreed upon between the Paint Manufacturer's Rep, MaineDOT, and the CONTR prior to commencing any coating work. This Coatings QC Plan shall detail the Manufacturer's paint specifications and coating application Instructions. These Specifications and Instructions are to be followed for the duration of the contract. Any coating system listed in this specification is strictly a guideline. The exact specification will be agreed upon prior to commencing work.

All finish colors shall be as directed by the MaineDOT.

All welds which are required to pass USCG inspection shall not be painted until the USCG OMCI assigned has witnessed and passed the required air test, water blast test, vacuum box test, dye-penetrant test or other test method applicable to the particular class of weld as required by the CFR. CONTR shall submit all test reports to MaineDOT. Coating of welds shall not commence before the attending USCG OCMI has passed the welds in question. If such areas are painted in advance

of required tests, the CONTR shall remove all paint applied to either or both sides of the weld to the satisfaction of the attending USCG OCMI in preparation for proper testing, at the CONTR's expense.

Coatings shall be stored, mixed, and applied under environmental conditions conforming to the manufacturer's recommendations, as listed on the manufacturer's published data sheets for the coatings being applied. No coating shall be applied when the dew point temperature is equal to or greater than the surface temperature of the surface to be coated.

Stripe coats, where specified, shall be applied with a brush to the following areas:

- All exposed plate and stiffener edges
- Brackets and flange plates
- Intersection of plates and/or stiffeners
- Cut-outs including scallops, rat-holes, manholes, etc.
- Welds
- Areas of difficult access
- Ladders and handrails
- Areas of pitting

Completed coatings will be inspected by the Paint Manufacturer's Representative, CONTR QC personnel, and MaineDOT. Completed coatings will be measured by a non-destructive (magnetic) film thickness gauge to confirm film thickness specified by the CONTR with verification from MaineDOT. Coatings shall be applied in an even manner free of holidays, runs and pinholes.

For each coat applied, CONTR shall take readings and produce a record of the ambient, surface, and dew point temperatures as measured: 1) before starting the coating application, 2) upon completion of the application, and 3) for every four hours in between (of applicable to the coat). The CONTR shall also list the details of the coating applied, including name of the product, batch numbers, and number of gallons applied.

The CONTR shall also take wet and dry film thickness measurements during and following coating applications and maintain records that map these readings to the coated areas and indicate compliance or non-compliance with intended thicknesses (for wet film) and required thicknesses (for dry film). The CONTR is to establish the appropriate number of wet film readings needed to ensure required coverage with review from MaineDOT. The CONTR shall provide MaineDOT with dry film readings in accordance with SSPC-PA-2 to determine an overall average millage to verify compliance with the required thicknesses for a given area.

The CONTR shall provide a copy of the temperature (weather log) and wet film thickness records, including notations regarding compliance and non-compliance with requirements, to MaineDOT. CONTR shall provide to the MaineDOT a copy of the dry film thickness measurements, including

notations regarding compliance and non-compliance with requirements, and review the results with the MaineDOT prior to application of the next coat.

The CONTR is responsible for all paint quality control and coordination of hold point inspections. The CONTR shall provide the MaineDOT at least 24-hour notice for a hold point inspection. CONTR shall have already performed its internal quality inspection prior to arrival of the MaineDOT. CONTR shall not proceed without signoff from MaineDOT.

Paint Manufacturer's Representative can establish additional hold point inspections where they deem necessary.

Final coat on the exposed steel bulkheads in the accommodations shall be same color as the interior bulkhead sheathing except in the pilothouse where the exposed steel bulkhead color shall be white.

631.1.4 PROTECTION/PREPARATION

Specifically reference MaineDOT Standard Specifications Section 506.13 as applicable.

Prior to the application of coating materials on any surfaces, including those already coated with a shop coat, the surfaces shall be made clean and free from foreign matter such as: crayon marks, dirt, dust, grease, heat and mill scale, oil, residual abrasive from blasting, rust salt deposits, weld spatter, standing water, etc. CONTR shall prepare surfaces to ISO-8502-3 standard/requirements.

Prior to the application of coating materials on any surfaces, including those already coated with a shop coat, the surfaces shall be made clean and free from foreign matter such as: crayon marks, dirt, dust, grease, heat and mill scale, oil, residual abrasive from blasting, rust salt deposits, weld spatter, standing water, etc. CONTR shall prepare surfaces to ISO-8502-3 standard/requirements.

All surface preparation shall be to the specifications and approval of the paint manufacturer's assigned Tech Rep and to the inspection and approval of MaineDOT.

All steel plates and shapes used in construction shall be wheelabrated to effect complete removal of scale, rust and other surface contaminants in accordance with Steel Structures Painting Council (SSPC) SP-10 (near white blast). Edges shall be knocked off at all structural shapes using paper disc or grinder. Aluminum surfaces will be given a light sand sweep and/or mechanically cleaned (i.e. ground or brushed) to remove surface contaminants and to establish the required surface profile prior to painting.

Water-soluble salts on steel substrate shall not exceed the recommended maximum values published by selected paint manufacturer. The water soluble salt levels shall be determined in accordance with the 'Bresle' method.

Prime coats shall be applied to clean metal surfaces in accordance with the manufacturer's specifications. All plates and shapes, including the shell exterior, shall receive one coat of preconstruction primer. Primer coating system and thickness shall not impede subsequent welding. The applied priming system shall be uniform, free of pinholes and holidays, and compatible with specified coating systems.

After erection, all weld lines and other areas of the vessel exterior and tanks where the priming system has been burned or abraded, shall be repaired as per the coating manufacturer's instructions. Clean-up abrasive blasting shall be in accordance with SSPC SP-10 (near white metal).

Galvanized material and stainless-steel surfaces which are to be coated shall be prepared as per the coating manufacturer's instructions prior to the application of paint.

Where blasting and/or grinding is performed, the CONTR shall seal off valves, machinery, equipment, and all openings to prevent damage from the grit and paint. Windows, doors, antennas, wires, A/C units, battery boxes, cables, deck lights, navigation lights, etc. shall be properly protected and sealed. All fixtures, deck coverings, joiner work, machinery, equipment, label plates, gages, instruments, etc. shall be protected during coating operations. Where necessary, scuppers, and overboard drains shall be sealed, plugged, or led clear overboard so that the hull will remain dry during the paint application. All debris produced from the blasting shall be removed and the surface shall be left in a condition ready to receive paint. Any equipment damaged by blasting and coating (including overspray) shall be repaired at the CONTR's expense.

Where wire brushing of steel surfaces prior to coating is specified, the use of a power wire brush or the equivalent is intended to remove all mil scale and rust to SSPC SP-11.

Special effort shall be made to mask hoses, gauges, and bright work prior to painting. Hoses which are painted, even partially, shall be replaced.

Prior to coating, surfaces will be cleaned and made free of contamination in accordance with paint manufacturer's requirements. Surfaces shall be dry and clean when painted. No coatings shall be done under damp or unfavorable weather conditions. No finish painting shall be done in compartments or tanks required to be tested until after the completion of such tests, without the MaineDOT's approval. All fixtures, equipment and adjacent surfaces shall be properly protected during painting and preparation.

The CONTR shall inspect all blasted and coated surfaces and correct all known issues prior to calling out the paint manufacturer's and MaineDOT for inspection.

Coatings are only to be thinned with solvent for spray painting or other purposes as specifically approved by the Paint Manufacturer's Tech Rep.

631.1.5 MACHINERY SPACES

All machinery and void spaces shall receive a complete and thorough preparation and a full coating system. When work has been completed in a hull machinery or void space all areas and surfaces shall be thoroughly cleaned prior to commencement of coating application. The coating manufacturer's Rep shall inspect and sign off on each space before MaineDOT signs off. This process shall be incorporated into CONTR's Quality Control Plan.

Piping or lagging which is exposed to view shall be color banded and stenciled for identification. Standard safety colors (approved by the MaineDOT) shall be used to distinguish machinery, pipes and fittings, which may present a hazard. Wooden switchboard handles shall have a dull finish.

631.1.6 HULL, DECK HOUSE MARKINGS

Paint for markings on the hull and deck house shall be compatible with the painted surfaces upon which they are applied.

631.1.7 PRE-CONSTRUCTION PRIMER

If the pre-construction primer applied to construction steel is not compatible with the paint system used, the pre-construction primer shall be removed.

631.2 SAMPLE COATING SCHEDULE

The Sample Schedule below is based on PPG Paint preparation and coating recommendations. It is included in these Specifications as a guide for the CONTR to use in assessing coating Manufacturer's proposals. MaineDOT must approve final paint specification and any "or equal" coating provider proposals.

All top coat colors are to be to MaineDOT's preference.

SAMPLE COATING SCHEDULE

ALL HULL COATINGS SHALL BE APPLIED, MAINTAINED, AND REMOVED CONSISTENT WITH FIFRA. ALL EXPOSED EXISTING OR NEW COATINGS SHALL CONTAIN ONLY APPROVED BIOCIDES AND/OR TOXICS

A.I EXTERIOR HULL KEEL TO WATERLINE (curved height waterline per Outboard Profile Plan)

A.1.1 : AREAS OF COMMERCIAL BLAST & NEW STEEL ONLY

- Sandblast welds to a SSPC-SPI0 Near White Blast and sweep blast new steel plates
- Amerlock 2 (Oxide Red) 6 to 8 mils DFT
- Amerlock 2 (Black) 6 to 8 mils DFT
- Amerlock 2 (Gray) Tack Coat 1 to 2 mils WFT
- ABC 3 (Red) 5 to 6 mils DFT
- ABC 3 (Black) 5 to 6 mils DFT
- ABC 3 (Black) - WL down 4 ft. band 5 to 6 mils DFT

NOTE 1: DFT readings are to be taken on **1st and 2nd coats** of Primer. The first coat of anti-fouling shall be applied over a tack coat of Amerlock 2. DFT shall be taken on each coat of the Antifouling.

NOTE2: Keel to waterline - The finish coat shall be **black**. The first coat shall be a color that contrasts with the final coat. Follow application guidelines to insure proper inter-coat adhesion.

NOTE 3: First coat anti-fouling shall be applied over a tack coat of Amerlock 2 while still "thumb print" tacky.

A.2 FREEBOARD - WATERLINE TO & INCLUDING RUB RAIL GUARD ONLY

A.2.1: The waterline to the rub rail guard and including the guard to the side shell weld on the main deck is to be coated in accordance with the requirements:

Spot blast to approval of OREP damaged/corroded areas to SSPC-6 commercial blast and “scuff sand” all sound and intact gloss finish areas prior to coating application to provide a profile and fresh water rinse.

- | | |
|---|------------|
| • Dimetcoat 302H (Spot coat to blasted areas) | 3 mils DFT |
| • Amerlock 2 (Full coat) | 5 mils DFT |
| • PSX 700 (Full coat all areas) | 5 mils DFT |

(Color to be Red below Guard, Guard to be Black)

A.3 TOP SIDES

A.3.1: AREAS OF COMMERCIAL BLAST & NEW STEEL ONLY

- | | |
|------------------|--------------|
| • Dimetcoat 302H | 3-4 mils DFT |
| • PSX 700 | 5-6 mils DFT |

(Color to be White including mesh panels, lower handrail courses, and rail stanchions; Black for pinstripe at 01 Deck, Bulwark caps, top course of handrails all around vessel, and main deck mooring fittings)

A.3.4: STACK

- Schedule as in A.3.1 above for Dimetcoat 302H with the following exceptions
- Finish coat PSX 700 color White 5-6 mils DFT
- Finish coat stripe on cap and base PSX 700 color Black 4 mils DFT

A.4 FREIGHT DECK

A.4.1: AREAS OF COMMERCIAL BLAST AND NEW STEEL ONLY

- | | |
|---|--------------|
| • Dimetcoat 302H | 3-4 mils DFT |
| • Amerlock 2 white (with aluminum oxide #24 cast by hand to the desired quantity) | 5 mils DFT |
| • Amerlock 2 grey | 5 mils DFT |
| • PSX 700 Color Grey | 4 mils DFT |
| • Note: Apply 5' x 5' wet sample for approval by OREP. | |
| • PSX 700 vehicle lane, evacuation routes, and ADA markings (white) | 2-4 mils DFT |

A.5 OTHER EXTERIOR DECKS INCLUDING PILOT HOUSE TOP

A.5.1: AREAS OF COMMERCIAL BLAST AND NEW STEEL

- Dimetcoat 302H 3-4 mils DFT
- Amerlock 2 white (with aluminum oxide #24 cast by hand to the desired Quantity per OREP) 5 mils DFT
- Note: Apply 5' x 5' wet sample for approval by OREP.
- PSX 700 Color per OREP 3-4 mils DFT

A.6 INTERIOR VOIDS & MACHINERY SPACES BELOW FLOOR PLATES

A.6.1: AREAS OF COMMERCIAL BLAST AND NEW STEEL ONLY

- Needle gun welds and disturbed steel to a SSPC-SP11 Power Tool Cleaning to Bare Metal
- Amerlock 2 Grey Stripe coat
- Amerlock 2 White 5 mils DFT
- Amerlock 2 Grey (color contrast with first coat) 5 mils DFT

A.7 INTERIOR MACHINERY SPACES ABOVE FLOOR PLATES

A.7.1: AREAS OF COMMERCIAL BLAST AND NEW STEEL ONLY

- Needle gun welds and disturbed steel to a SSPC-SP11 Power Tool Cleaning to Bare Metal
- Amerlock 2 Grey Stripe coat
- Amerlock 2 White or gray 5 mils DFT
- PSX 700 White 5 mils DFT

A.8 ACCOMMODATION & PUBLIC SPACES INCL. FREIGHT DK BULKHEADS – VISIBLE

A.8.1: AREAS OF NEW STEEL

- Amerlock 2 Grey Stripe coat
- Amerlock 2 Grey 5 mils DFT
- PSX 700 White 5 mils DFT

A.9 BEHIND INSULATION – ALL SPACES

A.9.1: AREAS OF NEW STEEL ONLY

- Amerlock 2 Grey Stripe coat
- Amerlock 2 White 5 mils DFT

A.10 MACHINERY SPACE FLOOR PLATES

A.10.1: COMMERCIAL BLAST AND NEW STEEL ONLY

- CONTR to research procurement of pre-blasted patterned steel floor plates
- Gray shop primer only per OREP 5 mils DFT

A.11 BILGE SLOPS TANK

A.11.1: COMMERCIAL BLAST AND NEW STEEL ONLY

- Amerlock 2 White 5 mils DFT
- Amerlock 2 Gray 5 mils DFT

A.12 PILOT HOUSE INTERIOR ROOF & SIDES

A.12.1: AREAS OF NEW STEEL

- Amerlock 2 Grey Stripe coat
- Amerlock 2 Grey 5 mils DFT
- Mascoat Marine-DTM 40 mils DFT
- PSX 700 White 5 mils DFT

A.13 CREW SPACE FLAT BELOW MAIN DECK, INTERIOR 01 DECK PUBLIC SPACES INCLUDING HEADS, CREW SPACE HEADS, INTERIOR PILOTHOUSE DECK AND PILOTHOUSE LOBBY

A.13.1.1: AREAS OF COMMERCIAL BLAST AND NEW STEEL:

- Dimetcoat 302H 3-4 mils DFT
- Amerlock 2 white 5 mils DFT
- PSX 700 pearl gray with color chip flakes 3-4 mils DFT
- PSX 700 clear top coat

A.14 REPAIR OF DISTURBED COATINGS

A.14.1: Minimum repair of disturbed existing coatings shall be (2) coats primer at 4 mils DFT each coat and (1) coat matching finish gray on Main Deck top surface; and (2) coats primer at 4 mils DFT on interior disturbed surfaces.

A.15 SHOP COAT

A.15.1: NEW STEEL PROVIDED WITH SHOP COAT

Proceed with specifications above. Normal steel procurement will include shop coat.

A.15.2: NEW STEEL NOT PROVIDED WITH SHOP COAT

All new steel that has not previously been shop coated shall receive a white metal blast to one side prior to installation. This side shall be shop coated with one coat of Interzinc 75V at 3-5 mils DFT. The blasted and primed steel shall be installed to the inboard side.

633.1 CATHODIC PROTECTION

Aluminum alloy anodes shall be stud bolted to the hull and underwater appendages, in particular, at critical areas that could generate electrolysis including the transoms. Each sea chest shall be fitted with two anodes. Anodes shall be secured to stainless threaded studs with stainless Nyloc nuts or approved equal having a minimum of 3-threads clear. Accurate stud spacing is essential for future replacement of anodes by divers.

There shall be anodes provided of sufficient capacity to provide 24-month minimum protection for the hull, sea chests, and hull appendages. CONTR shall submit specific material and locations to MaineDOT for approval prior to ordering.

634.1 INTERIOR DECK COVERINGS

In general, the CONTR shall follow the Coatings guidance schedule.

634.1.1 CREW SPACE IN HOLD

- Paint in accordance with schedule

634.1.2 MAIN DECK

- Miscellaneous lockers and Crew Shelter: Paint in accordance with schedule

634.1.3 01-DECK

- Passenger Cabins: Paint in accordance with schedule. Color and pattern to be approved by the MaineDOT OREP.
- Deck Locker and Storage Locker: Paint in accordance with schedule

634.1.4 PILOTHOUSE

- Pilothouse: Paint in accordance with schedule. Color and pattern to be approved by the MaineDOT OREP. Heavy duty rubber matting shall be provided in way of console operational standing area.

634.1.5 SAFETY MATTING

CONTR shall provide and install heavy duty rubber safety matting both for Main switchboards, Emergency switchboards, and Battery Storage Racks, suitable for the rated voltage at the front of the equipment and must extend the entire length of, and be of sufficient width to suit, the operating space; NoTrax Diamond Switchboard Matting 831C0036BL or approved equal cut into segments of approximately 40 lb each in machinery spaces (Ref: 46 CFR 111.30-11).

634.1.6 NON-SLIP STAIR TREADS

The CONTR shall provide and install non-slip stair treads on all interior and exterior (with exception of exterior pilothouse stairs) inclined stair steps including the top landing of each run. Treads shall be Wooster Products, Stairmaster 500 model non-skid, abrasive-filled or approved equal.

644.0 SANITARY SPACES & FIXTURES

644.0.1 GENERAL SCOPE

The CONTR shall provide and install plumbing fixtures and accessories in passenger heads, crew heads, and crew break room as per these Specifications and the Contract DWGS. Plumbing fixtures, fittings, and accessories shall be specifically manufactured for marine service with stainless steel or chrome plated cast brass trim. CONTR shall propose one material for MDOT review and approval before commencing work. Furnish and install fixtures complete with valves, faucets, stops, drain fittings, vents, and hangers. Traps shall be chrome plated cast brass with cleanout plugs.

All plumbing systems are performance based and are to be tested as such for the approval of the MaineDOT. CONTR shall test and document system prior to MaineDOT for approval. This includes clean out of all flushometers after installation and flushing of the sanitary supply water system.

644.0.2 ADA COMPLIANCE

All fixtures in the 01-Deck port side passenger head, designated as ADA, shall be provided and installed in strict compliance with ADAAG July 2013 regulations and requirements. The CONTR shall take particular care in horizontal and vertical locations for ADA compliance when installing grab rails, toilet, lavatory, mirror, paper holders, etc. All sanitary fixture locations must be approved by the MaineDOT. All other heads not ADA compliant shall be fit with grab rails.

644.0.3 SANITARY FIXTURES

The CONTR shall provide and install all sanitary fixtures as per Contract DWG material lists and these Specifications unless changes are specifically approved by the MaineDOT on a case by case basis.

MAINE DEPARTMENT OF TRANSPORTATION FERRY SPECIFICATIONS

- TOILETS (all heads): (5) Floor mounted, Kohler Model Highcliff K-96057, elongated bowl, white, ADA compliant, w/SEAT, Kohler Model Lustra K-4666, white, open front, no cover, or approved equal.
- FLUSHOMETER (all heads): (5) Sloan, salt water service, or equal.
- LAVATORY BOWL (3) (Port 01 Deck and 02 Deck Crew Head) Nameek's Arda Corner Sink, CeraStyle 001900-U, Corner mount, wall hung, w/overflow + strainer, or approved equal.
- LAVATORY BOWL (Starboard 01 Deck): American Standard Wheelchair Users Wall Mounted Sink, Model 9141.011.020, with overflow + strainer, or approved equal.
- LAVATORY BOWLS (Crew Head Hold) American Standard Lucerne, wall-mounted, Model 0356.028.020, with overflow + strainer, or approved equal.
- FAUCET (01-Deck heads): (3) Sloan, electronic Model EAF-350-ISM, or approved equal.
- FAUCET (crew heads): (2) Kohler Model K-15198 Coralais, centerset, or approved equal.
- HAND DRYER (01-Deck heads): (3) Excel ThinAir TA-SB surface mount, or approved equal.
- PAPER TOWEL DISPENSER (all heads & break room): (6) to match MaineDOT standard
- TOILET PAPER DISPENSER (all heads): (5) to match MaineDOT standard
- VANITY MIRROR (all heads): (5) Bobrick Model B-165-2430, or approved equal.
- SOAP DISPENSER (all heads): (5) Bobrick Contura Model 818615, surface mounted, or approved equal.
- WASTE RECEPTACLE (all heads): Bobrick surface mounted Model B-279 or approved equal.
- GRAB BARS (all heads): (1 x 36" Bobrick B5806-36) and (1 x 42" Bobrick B5806-42), or approved equal.
- BABY CHANGING STATION (1 starboard) Koala Kare KB301-01SS stainless steel vertical surface mount or approved equal
- HOT WATER SPIGOT (all heads): Under or near sink to fill mop buckets, with key to secure from passengers

644.0.4 CREW HEADS

The design calls for (2) unisex crew heads – (1) on the 02-deck FR52 and (1) in the Hold Deck.

644.0.5 PASSENGER HEADS

The design calls for (3) unisex passenger heads, two on the port 01 Deck and one starboard 01-Deck.

644.0.5.1 ADA STARBOARD SIDE 01-DECK HEAD

The STARBOARD side passenger head shall be ADA accessible and comply with ADAAG guidelines in all respects. Toilet transfer grab bars (Bobrick or approved equal) shall be installed in compliance with the ADAAG July 2013 requirements. The installation of the toilet shall adhere to ADAAG height and positioning dimensions. Hand dryers, vanity arrangement, lighting switches, mirror, etc. shall comply with ADAAG Guidelines.

645.1 PASSENGER, CREW, & PILOTHOUSE SPACES

645.1.1 GENERAL

The 01-Deck P/S Passenger Cabins; Crew and Passenger Heads; Pilothouse; Interior Passageways; P/S 02-Deck Stair Trunks; Crew Break Room (including common passageways, locker and snack prep area) shall be finished to a commercial standard with drop ceilings, finished lined side and ends joiner bulkheads from the deck to overhead drop ceiling, poured Epoxy deck covering, lighting, and marine grade furnishings. Heads shall be fitted with stainless bulkhead linings. A USCG-approved type bulkhead and lining system shall be used. Final finishes shall be reviewed and approved by MaineDOT. CONTR shall be responsible for providing and installing sound insulation and isolation treatment as necessary to assure that acceptable decibel levels are maintained in all crew and passenger spaces. Joiner system is to be by Rigidized Metals Corp., Ayres aluminum honeycomb panels, or approved equal. All joiner system components shall be incombustible. Note that air supply and exhaust fans are present in the overhead of the Crew Break Room. CONTR is to ensure that selected drop ceiling installation is capable of acoustical insulation from fan noise such that a 65 dB noise level can be achieved in the space in accordance with NVIC 12-82 Enclosure 6. Drop Ceilings in crew break room will observe minimum 7'-3" clear height above flat which will require CONTR to position HVAC equipment as close to deck beams as practical. Exhaust duct (8x6) in crew break room can be routed above counter tops and refrigerator in a soffit to fit under transverse girder. Note that air supply and exhaust fans are present in the overhead of each passenger cabin. CONTR is to ensure that selected drop ceiling installation is capable of acoustical insulation from fan noise such that a 60 dB noise level can be achieved in the space in accordance with NVIC 12-82 Enclosure 6. Drop Ceilings in passenger cabins will observe minimum 7'-3" clear height above 01 deck. This will require CONTR to position HVAC equipment as far inboard as practical and ensure fans and preheaters fit between frames to accommodate flange diameters.

645.1.2 PILOTHOUSE

The Pilothouse shall be fitted with a forward and aft navigation consoles similar to the consoles on existing MaineDOT fleet vessels. There shall be a fixed helm chair on center and two portable lookout chairs, one starboard at each of the two consoles (4 total). One chart table shall be above the stair to the pilothouse as shown on Contract DWGs. Drawers for maps, charts and manuals shall be incorporated into a storage area of the pilothouse console elsewhere. Shelving for manuals to be binder depth at a minimum. File cabinet shall also be provided under console. CONTR shall supply and install a raised settee with folding step (at same height as fixed chairs); publication rack; a frame for required USCG documents; and all navigation, control, and alarm

equipment. The helm and lookout chairs shall be Llebroc Industries, or approved equal, (Color to be approved by the MaineDOT). Aft end of Pilothouse port shall be fitted with console containing a sink, small refrigerator, coffee maker, and microwave, all as shown on the Contract DWGs and as approved by MaineDOT. Pilot house furnishings shall be submitted and approved by MaineDOT prior to ordering. A 4-inch height wooden platform shall be provided at each helm station to improve overall visibility from the pilothouse. Platform dimensions are roughly 36" x 36" and contours around the helm chairs.

The consoles shall be steel or aluminum framed, fabricated and sheathed with low reflective decorative laminate. CONTR shall submit material and color proposal to be approved by MaineDOT. The Pilothouse console shall be designed to accommodate an operator seated in the helm chair with control functions and navigational instrumentation within easy reach. All displays shall be readable in sunlight. All primary and safety Controls and equipment shall be provided with night backlighting and shall have brightness Controls dim to dark.

The CONTR shall fabricate a full scale mock-up of the proposed consoles out of lightweight plywood or other suitable material and assemble this mock-up in an interior space made suitable for the purpose. Portable full-scale cutouts of all console mounted equipment including controls, instrumentation, alarm panels, screens, access panels, etc. shall be provided. The CONTR shall work with MaineDOT to verify the exact placement of all equipment, to eliminate possible interferences, to maximize maintenance accessibility, and to promote ergonomic and logical operational function. Final approval shall be at MaineDOT's discretion.

When all mock up equipment has been placed, CONTR shall take photographs of the arrangement and accurate dimensions shall be verified. The pilothouse consoles shall be constructed and equipment installed according to the approved mock-up plans.

645.1.2.1 PILOTHOUSE EQUIPMENT & FURNISHINGS

- CHAIRS – HELM & LOOKOUT: Fixed; LleBroc LX Series w/pedestal package 4BRLX01 or approved equal
- CHART TABLE: Custom fabrication
- SETTEE: 3'-0" overall length, upholstered, w/stowage bin below, height to match chairs
- MAIN MONITORING & ALARM CONSOLES: designed by ABB, and Jastram
- (2) FLASHLIGHTS MOUNTED/REMOVABLE NEAR DOORS, final location at direction of MaineDOT
- WASTE BIN, galvanized metal with lid
-

645.1.2.2 STARBOARD BRIDGE WING STATION

The Starboard Bridge Wing shall be provided and installed as shown on the Contract Dwg. Controls shall be housed in a hinged enclosure with a maximum width of 36" and depth of 24". A full scale mock-up of the console shall be approved by the MaineDOT. Internal components shall be accessible through a watertight panel in the front.

Bridgewing throttle controls shall be provided for both propulsion motors, joy stick lever (non-follow up) for each rudder, rudder angle indicator for each rudder, active control station selector/indicator, horn push button, radio communications, as well as gauges for vessel speed and digital compass heading. See ABB Bridgewing console panel in the ABB specifications. The orientation of the crew manning the station will be forward facing (Islesboro End). Sightlines to the rescue boat and davit will be maintained clear of obstruction.

645.1.3 01- DECK PASSENGER CABIN

- 645.1.3.1: The 01- Deck passenger cabins P&S shall be fitted with interior seating for (61) passengers on the port side and (52) passengers on the starboard side. Seating shall be by Freedman Seating, Chicago, IL, Model Gemini, or approved equal. Interior seats are to have upholstered removable backs and seats. Installation shall be with studs welded to the deck and finish cap nuts. The seat bases will need to be custom built to accommodate the baseboard heaters with protective covers along the perimeter of the bulkheads. Seating upholstery and frame finish colors shall be approved by MaineDOT. Tables are to be manufactured from Plascore or approved equal aluminum honeycomb core with a decorative panel. Fastened to a stanchion and a bulkhead ledger. Seats and tables are to remain covered for protection after installation through delivery of the vessel.
- 645.1.3.2: Passenger heads P&S 01-Deck shall be fitted with sanitary equipment (See Section 644.0.1).
- 645.1.3.3: The CONTR shall provide and install (2) sets of wheel chair tie downs in the starboard 01-Deck passenger space to be located to the approval of the MaineDOT. Tie downs shall be Q'Straint M Series, or approved equal.
- 645.1.3.4: All bulkhead and deck surface finishes shall be of non-combustible material with color/pattern approved by MaineDOT.

645.1.4 SUPERSTRUCTURE EXTERIOR ACCOMMODATIONS

The exterior 02 deck shall be fitted with exterior seating for (75) passengers. Seating shall be by Freedman Seating, Chicago, IL, Model Gemini or approved equal with rigid plastic backs and seats. Installation shall be with studs welded to the deck and finish cap nuts. Seating body and frame finish colors shall be approved by MaineDOT. Each exterior seat shall be provided with drain hole in center to drain out rainwater.

645.1.5 SPARE SEATING

CONTR shall supply (3) spare single passenger seats and (2) spare double seats. Spare seats shall be crated for storage and shipped directly to a MaineDOT storage facility as designated by MaineDOT.

654.1 UTILITY, CREW, & WORK SPACES

654.1.1: ENGINEERS OPERATING STATION (EOS)

The EOS shall be provided and installed as shown on the Contract Dwgs at the forward end of engine room. EOS shall be by QuietStar Industries, or approved equal, and shall match the enclosure installed on the previous MaineDOT ferry vessel. The EOS shall be provided with an aluminum console to the approval of the MaineDOT. A full scale mock-up similar to the required pilot house console shall be provided (see above). Protect corners and edges against damage with polished metal trim pieces. Fit the front and one side with doors fitted with ventilation louvers to permit convenient access to all internal components. A commercial quality armchair, and a two drawer, legal sized, file cabinet w/sub-base and secured to the bulkhead. CONTR shall submit steel storage shelves proposal to MaineDOT for review and approval by MaineDOT. CONTR shall provide starboard outboard of the ER stair at the direction of the MaineDOT. Provide sufficient LED lighting and electrical outlets under the console for maintenance and electrical equipment. Lights shall be switched inside and convenient to access doors. All EOS furnishings shall be submitted to MaineDOT for approval prior to ordering.

654.1.2: MISCELLANEOUS ENGINE ROOM EQUIPMENT

- Rag bucket – metal with hinged top, red, minimum of 4, to approval of the MaineDOT
- Trash bucket – metal to approval of the MaineDOT
- 2 shop towel dispensers to approval of the MaineDOT
- Sounding Tape: 33 ft Liquid removed from tank measure stainless steel-McMaster-Carr 2294A41 or approved equal
- Flashlight mounted/removable at top of ER access stair, final location at direction of MaineDOT

654.1.3: MISCELLANEOUS AUX. ENGINE ROOM EQUIPMENT

- Rag bucket – metal with hinged top, red, to approval of the MaineDOT

- Trash bucket – metal to approval of the MaineDOT
- 2 shop towel dispensers to approval of the MaineDOT
- Flashlight mounted/removable at top of Aux ER access stair, final location at direction of MaineDOT

654.1.4: DECK LOCKERS

Supply and install metal sheathing in deck lockers for hanging chock and chain stowage, protect joinery material and fire insulation. CONTR to supply steel shelving, jacket hooks, and flashlight mount to the approval of the MaineDOT.

654.1.5: CREW BREAK ROOM

All furnishings and outfit to be secured against movement while underway. All the below shall be submitted to MaineDOT prior to ordering for approval. Crew break room appliances shall be powered by a dedicated sub panel.

- Microwave: 0.7 cu. Ft., Black & Decker, Hamilton Beach, or approved equal
- Coffee Maker: Keurig K50, or approved equal
- Refrigerator: 18 cu.ft. Frigidaire, or approved equal
- Toaster oven
- Desk: Custom fabrication with drawers under
- Commercial quality armchair
- Two drawer, legal sized, file cabinet w/sub-base
- Steel Storage shelves at the direction of the MaineDOT
- Cabinetry and countertop at the direction of the MaineDOT Shelves and countertops shall have a lip to prevent rolling objects.
- (6) Metal Storage Lockers at the direction of the MaineDOT
- Table and (4) Chairs at the direction of the MaineDOT
- Flashlight mounted/removable at top of Crew Break Room access stair, final location at direction of MaineDOT
- Waste Bin, galvanized metal with lid

654.1.6: ENGINEERS WORKSHOP

- Vidmar tool storage and work bench system (approx. 30” deep x 12 ft long with a ¾” lip). Workbench shall have light, air, electrical outlets, drawers, and shelves backed by a tool board.(See Quote #217537 From Stanley Black & Decker to Maine DOT for Vidmar Supply)
- Flammable Liquid Locker
- Fire Rated Oily Waste Can
- (2) shop towel dispensers – to match MaineDOT standard
- Bench Grinder
- 6” Bench Vise, associated mounting hardware
- ¾ inch metal diaphragm pump with repair kits
- Trash bucket – metal
- Tool Kit, Heavy Diesel Technician: TEKTON Item #BDL99912 or approved equal.
 - All Engineer’s Workshop furnishing shall be submitted to MaineDOT for review and approval prior to ordering and commencing work.

654.1.7: PILOT HOUSE

- A wooden riser platform shall be provided at each console on centerline. Riser shall fit around captain’s chair to elevate crew and improve sight lines. Height of risers shall be directed by the MaineDOT OREP. Wood material shall be teak, mahogany, ipe or other hardwood suited for marine environment.

SECTION 800 INCLINING

The following specifications provide for items not covered elsewhere in these Specifications that are, however, required to be performed under this contract. A number of SWBS 800 Sections have been moved to Section 0.0 and Section 900 at the OWNER's option.

The construction of the vessel shall be designed to meet the subdivision, intact stability, and damage stability requirements of 46 CFR Subchapter "H" and Subchapter "S". The CONTR shall obtain and post the Stability Letter (Reference Section 0.6.3).

- 843.1 INCLINING EXPERIMENT

843.1 INCLINING EXPERIMENT

843.1.1 GENERAL SCOPE

The CONTR shall schedule an Inclining Experiment for a mutually agreeable date with MaineDOT and Gilbert Associates. Prior to the test, Gilbert Associates will submit the Inclining Experiment Procedure to USCG/MSC for approval. Thirty days must be allowed for the USCG/MSC submittal and approval; therefore the CONTR is obligated to stay in communication with Gilbert Associates, as to schedules and particulars of the Inclining Experiment evolution.

843.1.2 PREPARATION & EQUIPMENT

The CONTR shall prepare the vessel in all respects for the Inclining Experiment. The CONTR shall provide all crane services, rigging, labor, certified weights, and materials to perform the Inclining Experiment in accordance with the Inclining Procedure which has been prepared and submitted to USCG/MSC by Gilbert Associates. The Inclining Procedure shall be written in accordance with the specifications of USCG (MSC), NVIC 15-81 and ASTM Volume 01.07 "Shipbuilding" Standard F1321-14. The CONTR shall supply all necessary Inclining Experiment apparatus including, but not limited to, required certified weights, (3) pendulums and oil filled troughs (or other approved apparatus), a small powered boat or powered float (with operator), and weight moving apparatus.

So far as possible, all tanks and voids shall be dry and opened for USCG inspection. Where this is not possible, tanks shall be accurately sounded and liquid levels recorded. A positive visual means of proving the main fuel oil tank level in the presence of the USCG OCMI shall be prepared. This may mean removal of a bolted plate scuttle and use of a sounding tape.

NOTE: The Local USCG OCMI will require copies of the certified weights. These weights must have been certified within the time frame as required by the Inspector. It is the CONTR's

responsibility to make sure that the weights and their certifications will be available to and acceptable to the observing USCG OMCI prior to the scheduled day of the Inclining Experiment.

Gilbert Associates shall supervise the Inclining Experiment, record results, and submit same to USCG/MS. A copy of the raw data derived from the Inclining Experiment must be submitted to the attending USCG OCMI at the completion of the Test. On the day before the scheduled test, the CONTR and Gilbert Associates shall jointly inspect the condition of the vessel to certify that all preparations are complete in accordance with the Inclining Procedure as approved by USCG/MS.

No work or personnel movements on or off the vessel can be scheduled during the Inclining Experiment process. Weather conditions must be acceptable to the USCG OCMI. Berthing with slack lines and removed gangway will be a requirement.

SWBS SECTION 900 TESTS & TRIALS, SERVICES

The following specifications provide for Tests & Trials and services required to be performed under this contract:

- 980.0 GENERAL SCOPE
- 981.0 LAUNCHING & DRYDOCKING
- 982.0 SHOP TESTS
- 983.0 INSTALLATION TESTS
- 984.0 OPERATIONAL TESTS
- 985.0 DOCK & SEA TRIALS
- 986.0 ADMEASUREMENT TONNAGE
- 987.0 DELIVERY/FINAL ACCEPTANCE

980.0 TESTS & TRIALS GENERAL SCOPE

The CONTR shall develop a Test Schedule to demonstrate the installation, capability, and performance of all ship systems to the satisfaction of the attending USCG OCMI and the MaineDOT at least 90 days before test and trials commence. The Test Schedule and performance shall be at CONTR's expense and to be carried out on the Vessel before the Vessel is declared to be ready for acceptance by MaineDOT. The testing requirements of 46 CFR Subchapter H and those as described in these Specifications shall be adhered to.

MaineDOT and their Design Agent shall have the right to include its personnel, crew, or other designees of their choice on all Tests and Trials, including the delivery of the Vessel to Rockland, Maine, and to reasonably alter, amend, extend, or reduce the said Test Schedule to ensure compliance with all applicable Governmental Rules and the Vessel's Coast Guard Certificate of Inspection, as of the effective date of the Contract. All expenses of such tests and trials shall be borne by CONTR.

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

The Test Schedule shall include CONTR provided Test Report Sheets. These shall be filled out for each test and signed off by the CONTR's representative first and if applicable the Manufacturer's Rep and then MaineDOT; and, if applicable the attending USCG OCMI. Shop tests, ship installation tests, and trial tests shall be scheduled and completed to the satisfaction of the MaineDOT and attending USCG OCMI.

The test title and brief description; any deficiencies and/or corrections; and the date of satisfactory completion of each test shall be recorded by the CONTR and provided to MaineDOT.

The CONTR shall engage Tech Reps and/or utilize such additional equipment as necessary to accomplish successful tests at no cost to MaineDOT. The CONTR shall ensure that Tech Reps

attend commissioning, tests, and trials for major machinery or system components. These shall include, but may not be limited to, switchboards, alarm and monitoring, steering gear, gensets, main propulsion engines, navigational electronics, and the fire suppression system.

Testing should occur in the following sequence:

1. Shop Tests
2. Installation Tests
3. Operational Tests
4. Dock Trials
5. Sea Trials

CONTR shall provide all consumables required to accomplish testing and trials, including cooling system additives, lube oil, fuel oil, hydraulic oil, and other materials required to demonstrate the functioning and performance of ship systems and the vessel itself.

981.0 LAUNCHING & DRYDOCKING

The CONTR shall be responsible for the satisfactory launching of the vessel at a time to be mutually agreed upon by all parties concerned. The CONTR shall be responsible for dry docking the vessel, if drydocking is required subsequent to launching and prior to delivery to MaineDOT. If the vessel is launched into a salt water environment more than 90 days prior to delivery, the CONTR may be required, at the Owner's option, to dry dock the vessel for bottom inspection, cleaning, and coating repairs sufficient to maintain the coating warranty.

If underwater damage resulting from the launch, or other events, is observed or suspected the CONTR shall be responsible to dry dock the vessel in order to affect repairs. Suspected damage shall be first confirmed by a diver and video record at the CONTR's expense. A decision to dry dock the vessel shall be made in accordance with the information gleaned from the launch events and by the diver's video. If the OWNER requires a dry docking, and no damage is found, the dry docking shall be on the OWNER's account. In any case, if the USCG OCMI requires a dry docking due to suspected launch damage or other events occurring prior to delivery, the CONTR shall comply with the OCMI's directive at the CONTR's expense.

982.0 SHOP TESTS

Primary machinery and equipment shall have passed factory "shop" tests before delivery to the CONTR's facility. The manufacturer or vendor shall provide the CONTR with certificates demonstrating compliance with this requirement. CONTR shall submit documentation to MaineDOT. Testing shall be in accordance with the recommendations of SNAME T&R 3-39 Guide for Shop and Installation Tests. Equipment to be Shop Tested shall include (but not be limited to) the following:

- Propulsion motor testing to demonstrate operation over the entire range of engine speeds and loads. Measurement of all relevant parameters to demonstrate engine performance. Testing of all safety and interlock devices. Post-run inspections of critical components.
- Reduction gear inspection and testing, including casing alignment inspection, operational testing of lube oil/hydraulic oil system operation, operation of the gear at rated speed for one hour, and post run inspections of critical components.
- Generator testing to demonstrate operation over the entire range of loads. Generator load shall be built up in 25% increments of 30 minutes each to 100%, which shall be maintained for four (4) hours, followed by 110% rated load for two (2) hours. Loading shall be based on current (Amperes) and a power factor of 0.8.
- The main switchboard shall be tested as required in accordance with the DVPT and Fault Current Analysis schedules.
- Testing and calibration of safety relief valves (furnace).
- Testing and calibration of all mechanical system field instruments; analog pressure/temperature gauges, continuous pressure/temperature signal transmitters, pressure/temperature switches.

Pipes, valves and fittings shall have material and pressure test certificates if required by the regulatory agencies.

983.0 INSTALLATION TESTS

983.0.1 HULL TEST

CONTR shall perform hull tests to demonstrate the watertightness of the structure and fittings. The hull, watertight bulkheads, Main Deck, superstructure, and all watertight closures shall be air tested. All watertight tests shall be performed prior to painting.

983.0.2 FUEL OIL TANK TEST

CONTR shall perform hydrostatic tests on the fuel oil tanks by filling each with fresh water to the height of the overflow. The tests shall be made after vent pipes, sounding tubes, and all other connections have been fitted but prior to painting.

983.0.3 DOORS, HATCH, AND GATE TEST

Doors, scuttles, manholes, and similar closures which are gasketed shall be tested to USCG requirements. Visually inspect other door, gate, and closures to demonstrate proper workmanship and operation.

983.0.4 WINDOWS TEST

Windows shall be hose tested in conjunction with the testing of the adjacent plating. Hose testing shall be accomplished by directing a stream of fresh water against the structure at the manufacturer prescribed hose test parameters.

984.0 OPERATIONAL TESTS

CONTR to check all switches, alarm circuits, control devices, etc., for proper function. Calibrate and check automatic thermal control devices, alarm, and indicator devices. Check all operating pushbuttons, selector switches, remote pushbuttons, pressure switches and control devices to assure their proper operation. Ensure proper access to valves and gauges. Check that local indicators are consistent with remote panel readouts. Test all motor driven appliances under normal operating load conditions. Where applicable CONTR shall test both automatic and manual modes of operation.

All pumps shall be tested to determine flow and head in all configurations of operation. Bilge pumps shall be demonstrated to prime and pump from all voids to overboard. The fire and bilge pumps shall be demonstrated to prime and pump from the sea chest to the fire hose and two most remote fire nozzles. Flow and pump discharge pressure shall be measured.

985.0 DOCK & SEA TRIALS

985.1 GENERAL SCOPE

Dock and Sea Trials shall be performed to the satisfaction of the MaineDOT and, as required, by the attending USCG OCMI. Trials shall be scheduled mutually by the CONTR, the MaineDOT, and representatives of the Local OCMI.

The CONTR shall provide Check-Off forms for both Dock and Sea Trials. These forms shall be approved in advance of trials by the MaineDOT and if necessary the Local OCMI.

Sea Trials will be performed using the SNAME Technical & Research Bulletin #3-47 and these Specifications for guidance. All Dock and Sea Trial Data shall be recorded and provided to the MaineDOT.

985.2 DOCK TRIALS

Dock trials shall be scheduled for a date and time mutually agreeable to the CONTR, MaineDOT, and the attending USCG OCMI. The MaineDOT may wish to have additional personnel on hand for these trials and, depending upon the CONTR's venue, it may be necessary to plan travel in advance. It is the CONTR's responsibility to provide the USCG OCMI assigned to the project with sufficient advance notice of dock trial schedules. The CONTR shall be responsible for all costs associated with Dock Trials.

The purpose of Dock Trials is to test all equipment and systems under operational conditions prior to moving away from the security of the construction or fit-out berth. Some testing and approvals may be accomplished in advance of the Dock Trial schedule as long as communicated with the MaineDOT.

985.2.1 PRELIMINARY DOCK TRIAL SCHEDULE

The CONTR shall prepare the dock trial schedule of test items and submit in advance to the MaineDOT . The Dock Trial principle is to perform system and equipment operations so that Sea Trials will be completed without problems.

The vessel shall be fueled under the supervision of the CONTR and the MaineDOT at a time mutually acceptable to all parties. The CONTR shall provide fuel truck access to the vessel's fueling station and shall allow for labor and miscellaneous materials to assist with the fueling. Past experience has found that connection fittings, bucket, oil absorbent "diapers", etc. may be required. Fuel for tests, trials, and delivery is the CONTR's expense.

The following schedule is "preliminary" and only to serve as a guide. Any items that can be approved in advance can be eliminated; however, MaineDOT may be on hand and may call for performance demonstrations of particular Contract task items at no extra cost to MaineDOT.

- 1) Propulsion motors, Reduction Gears: Start up, forward & reverse control, shut downs
- 2) Generators: Start up, power load, shifts, shut downs, sensors. The CONTR shall allow for a Load Bank test.
- 3) Energy Storage System: Start up, power load, shifts, shut downs, sensors. Coordinate with Corvus/ABB
- 4) Main Switchboards: Operational performance, shift shore to ship's power and back
- 5) Rescue Boat, rescue boat motor, and Davit weight and operational
- 6) Electrical Systems: Compliance with 46 CFR Subchapter H and IEEE 45; Operational
- 7) Lighting and Receptacle Tests: Operational
- 8) Pilothouse: Navigation and communication equipment (all)
- 9) Pilothouse: Alarm systems (all)
- 10) Pilothouse: Security systems (all)
- 11) Steering gear: Operational performance (2 sets)
- 12) Fire Main System: Operational performance
- 13) Sprinkler System: Operational performance
- 14) Bilge System: Operational performance
- 15) Potable Water System: Operational Performance
- 16) Fuel Oil System: Operational Performance
- 17) Compressed Air System: Operational Performance
- 18) Vents, Fills, & Sounds: Operational
- 19) Engine cooling Systems: Operational
- 20) HVAC system: Operational performance (heating and cooling)
- 21) Engine room ventilation system: Operational performance
- 22) CCTV Security System: Operational
- 23) Noise Levels: Test and comparison to NVIC 12-82
- 24) Flushing Water: Operational at all points
- 25) Lube Oil: Nozzle Operational in Aux ER
- 26) Dirty Oil: Suction and quick connects operational in Workshop and Aux ER

The following 985.2.2 to 985.6 shall not be all inclusive.

985.2.2 PIPING & MECHANICAL SYSTEMS

As a part of Dock Trials, the CONTR shall test the functions of the Piping & Mechanical Systems. The CONTR shall test all pumps, fans, the compressor, the boiler, heat exchangers, and equipment to demonstrate proper operational service. Equipment shall be run at steady state for a period of one (1) hour or one (1) full duty cycle, whichever is less. Prior to a pump test, the CONTR shall verify that the pump is primed with its service fluid.

The following steady state test conditions shall be measured and recorded:

- For centrifugal pumps: pump suction and discharge and flow rate, record motor current
- For positive displacement pumps: pump differential pressure and flow rate, record motor current
- For fans: fan static pressure and flow rate
- Fire Main test full pressure and record at the two highest fire stations in the system

All modes of control for a piece of equipment shall be tested (i.e., hand/off/auto, local/remote). Auto start/stop control shall be demonstrated to initiate action at the correct set points. Pressure and temperature settings of control instrumentation shall be adjusted as needed.

Pressure/temperature regulating valves or control features shall be tested to demonstrate that the correct set point is maintained. Set points shall be adjusted as needed to ensure proper system function. Mechanized control actuators for valves and dampers shall be tested for proper operation. CONTR shall submit all documentation for the above to MaineDOT.

985.2.3 ELECTRICAL SYSTEMS

As a part of Dock Trials, the CONTR shall test the functions of the Electrical Systems. The CONTR shall demonstrate the operation of the electrical distribution system on both shore power and ship's power. All equipment shall be tested under normal operational load. Test all switches and control devices for proper function. Circuit breakers shall be tested by manually opening under load.

The CONTR shall test all motor controllers for proper function. Motors shall be operated at a steady state for a period of one (1) hour or one (1) full duty cycle, whichever is less. The CONTR shall measure and record voltage and amperage at various phases of motor speed. Automatic thermal control devices, alarm devices, and indicator devices shall be checked and calibrated as required.

Electronic equipment shall be tested under the supervision of the manufacturer's Tech Rep. The RF electronic system shall not be considered complete until the FCC inspection and certification has been accomplished. The CONTR is responsible for attaining the FCC vessel station certification and posting in the Pilothouse. CONTR shall submit all documentation to MaineDOT.

985.2.4 ALARM & MONITORING SYSTEMS

As a part of Dock Trials, the CONTR shall test the functions of the Alarm & Monitoring Systems. In accordance with the PSTP and DVTP, each alarm shall be tested to demonstrate actuation at the correct set points. Each alarm channel shall be tested independently to demonstrate that the required audible/visual alarm indication is given. For instance, pressure switches shall be subjected to a false pressure signal to test the internal pressure-sensing and switching capability. False electrical signals or the alteration of alarm system set-points to mimic alarm conditions are prohibited, except in cases where it is necessary to protect equipment from damage or is impractical to do otherwise.

The CONTR shall develop and perform the Periodic Safety Test Procedures (PSTP) and Design Verification Test Procedures (DVTP) as required in the CFRs. CONTR shall submit the PSTP and DVTP to MaineDOT prior to conducting the test. Testing shall be performed with the guidance of the on-site Tech Rep for the propulsion motors, generators, reduction gears, steering systems, and alarm/monitoring system. Tests shall be accomplished in the presence of the MaineDOT and the attending USCG OCMI.

CONTR shall demonstrate that alarm circuits do not alarm under normal transient conditions when equipment is being started or shutdown, or during operator command changes such as rapid rpm reduction of the main propulsion system. Adjust delay timers and dead band settings as necessary to avoid nuisance alarms.

985.2.5 PROPULSION CONTROLS

As a part of Dock Trials, the CONTR shall test the functions of the Main Engine Propulsion Controls from the Pilothouse conning stations. Tests shall include:

- Engine starting and shutdowns
- Local engine speed controls
- Pilothouse engine speed controls
- Transfer of control functions
- Pilothouse emergency propulsion engine shutdown
- Proper operation of remote indicators for shaft rpm

CONTR shall submit all testing documentation to MaineDOT.

985.2.6 STEERING GEAR

As a part of Dock Trials, the CONTR shall test the functions of the Steering gear systems from the Pilothouse and fwd/aft peak conning stations. Tests shall include:

- Local/remote starting and stopping of steering gear HPU hydraulic pumps
- Rudder response to helm commands over the full range of motion (stop to stop) from the local control station and from each Pilothouse conning station
- Time rudder swing rates from hard over to hard over in both directions with each hydraulic pump
- Operation of the steering system in follow-up and non-follow-up modes

- Verify that the hydraulic system pressures and temperatures are within normal operating limits and those hydraulic system components such as pressure regulating valves, relief valves, etc. function properly.
- Operation and calibration of the Pilothouse rudder angle indicator

CONTR shall submit all testing documentation to MaineDOT.

985.3 SEA TRIALS

985.3.1 GENERAL

A Sea Trial will be performed to generate a baseline measure of speed; maneuvering, steering; and handling characteristics. Sea trial results shall be recorded and all data shall be provided to MaineDOT. All main propulsion and auxiliary machinery equipment and systems shall be tested to full operational capability to the satisfaction of the USCG OCMI, MaineDOT, and the major equipment Tech Reps, as appropriate. The CONTR shall be responsible for all costs associated with Sea Trials including, but not necessarily limited to: Crewing; Tech Rep attendance; consumables such as fuel, lubrications, etc.; bottled water, beverages, and light lunch for riding personnel; pilotage, if required; and line handlers. CONTR shall be responsible for properly licensed captain/crew.

Drafts, tank soundings, and the names of all personnel aboard shall be recorded for sea trials. The following trials shall be performed to the satisfaction of MaineDOT and the attending USCG OCMI.

All CONTR and MaineDOT personnel engaged on Sea Trials shall supply the CONTR, in advance of the date of Sea Trials, with identification (Identification may be TWIC) at the CONTR's direction and discretion.

985.3.2 ENDURANCE TRIAL

A four (4 total) hour endurance trial shall be performed to demonstrate the vessel's sustained operation at full speed (2 hours in each direction) in hybrid propulsion mode. An additional endurance trial/battery performance trial shall be performed to demonstrate the vessel's sustained operation in battery only mode at route speed to determine battery performance. Battery performance trial will be timed from prearranged start and end charge level. CONTR shall coordinate with ABB and Corvus for battery performance trial limits. All documentation shall be submitted to MaineDOT.

985.3.3 MANUEVERING TRIALS

A series of maneuvering tests shall be used to evaluate vessel maneuverability and to measure basic course-keeping and turning qualities. The following tests (not all inclusive) shall be carried out with propulsion machinery at each end of the vessel:

- Quick reversal from ahead to astern
- Quick reversal from astern to ahead
- Crash Stop from full speed ahead (time to stop and distance travelled recorded)

- Ahead steering test
- Reverse steering test
- Steering system transfer, emergency steering
- Turning circles to both port and starboard at full speed
- Zig-zag maneuvering test to determine directional stability

All documentation shall be submitted to MaineDOT.

985.3.4 PERFORMANCE TRIALS

- Speed and Maneuvering Trials will be conducted in the vicinity of the CONTR's construction venue. The David Taylor formula for water depth with no added resistance from bottom effects is 86 ft for this vessel. Top speed of the vessel will not be determined in water of less than this depth. Speed trial should not be attempted in water depth less than 40 ft.
- At least one hour of the Sea Trials shall be performed during hours of darkness.
- Vessel speed will be measured in accordance with a Trial Plan proposed by the CONTR and mutually agreed to by the CONTR and MaineDOT. Reference shall be Guide for Sea Trials, SNAME Technical & Research Bulletin 3-47, 1989.
- Vessel speed will be measured by DGPS at approximately six (6) RPM points. If current, sea, or wind are factors during the trials, reciprocal runs shall be made and speed averaged.
- Results of the Speed Trials will be recorded and provided to MaineDOT.
- Sea Trial maneuvering tests shall include maneuvering tests, steering capabilities, and crash stops.
- Prior to delivery, the ship's magnetic compasses shall be adjusted by a qualified compass adjuster and Deviation Cards shall be provided.
- The following parameters shall be measured and recorded and submitted to MaineDOT:
 - Shaft rpm (both ends, both directions)
 - Fuel rack position (or equivalent)
hybrid mode
 - Fuel consumption (each engine)
hybrid mode
 - Speed through water
 - Shaft bearing temperatures
 - After cooler circuit press/temp –
hybrid mode
 - Charge air system temp/pressure
 - Lube oil system temp/press
 - Fuel Oil System temp/press
 - Jacket water temp/press hybrid mode

- Reduction gear lube oil temp/press
- Exhaust temp/back press – hybrid mode

985.3.5 PRELIMINARY SEA TRIAL SCHEDULE

The following schedule is “preliminary” and shall serve as a guide. CONTR shall be responsible for completing the final schedule for approval. The vessel Captain and Chief Engineer, the MaineDOT, and/or the attending USCG OCMI may wish to modify this list according to the results of the Dock Trials and the circumstances prevalent at the time of Sea Trials.

- 1) Magnetic Compass adjustment
- 2) Endurance trials
- 3) Maneuvering trials
- 4) Communication Equipment and Systems
- 5) Navigation Equipment, Electronic
- 6) Navigation Equipment, non-Electronic
- 7) Propulsion control system
- 8) Steering Systems
- 9) Anchor System
- 10) Rescue Boat and Rescue Boat Davit
- 11) Emergency drills for delivery crew
- 12) Systems & equipment as required by the attending USCG OCMI

985.3.6 MAGNETIC COMPASSES

The magnetic compasses shall be “swung” by a compass adjuster. Compass adjustment shall be the CONTR’s expense. The compass adjuster shall provide new deviation cards.

985.3.7 RADAR HEADING FLASHERS

The Electronic Navigation Tech Rep may be able to calibrate radar heading flashers during Dock Trials or at another time prior to Sea Trials. If this is not the case, radar heading flasher calibrations shall be accomplished as a part of Sea Trials.

985.3.8 SAT COMPASS & AUTO PILOT

Demonstrate proper functioning of the sat compass and auto pilot system.

985.3.9 MAIN ENGINE PROPULSION CONTROL SYSTEM

Demonstrate proper functioning of the Propulsion Control System by running through the ranges of power settings for ahead and astern, and demonstrating emergency procedures.

985.3.10 STEERING GEAR

Start each test (#1 and #2 steering pumps) with the vessel underway at full RPM, rudders amidships. Test steering at each end of the vessel through the full range of rudder angles. Test

for conformance with rudder speed requirements. Test steering in fwd/aft peaks and in emergency situations.

985.3.11 NOISE AND VIBRATION SURVEY

The CONTR shall provide an independent Noise and Vibration Analysis Surveyor, Noise Control Engineering, Billerica, MA, or approved equal, to attend sea trials and to record noise and vibration levels in machinery spaces, crew work and living spaces, and passenger spaces. The written report of this survey shall be provided to the CONTR and to the MaineDOT.

Maximum noise levels allowed shall be as determined by the recommendations detailed in NVIC 12-82.

985.3.12 POST TRIAL INSPECTIONS

Following underway sea trials, oil samples shall be taken from generator engines and reduction gears. Samples shall be sent to an approved lab for analysis. Written reports shall be provided to the MaineDOT to establish a base line.

985.3.13 ADDITIONAL TESTS & TRIALS

The attending USCG OCMI may require additional tests and trials than the preliminary trials listed above. The CONTR is responsible for completing required tests and trials and shall allow time in the Dock & Seat Trial schedules for such eventuality. CONTR shall be responsible for submitting all documentation for as needed future tests to MaineDOT.

986.0 ADMEASUREMENT TONNAGE

986.1 GENERAL

The CONTR shall be responsible to have the vessel admeasured for Domestic Regulatory and ITC tonnages. The CONTR shall arrange for a major classification society tonnage surveyor to perform this work and shall assist the tonnage surveyor to Survey the vessel. All fees associated with the issuance of new tonnage documents will be the responsibility of the CONTR. The completed survey shall be submitted to MaineDOT for review.

987.0 DELIVERY/FINAL ACCEPTANCE– Standard Specifications Section 107.9 Project Closeout

987.0.1 GENERAL SCOPE

When the Vessel has passed all tests and trials and vessel construction is complete, or substantially complete as defined below, and after the CONTR has notified the Department in writing that it considers the project complete, it shall be delivered by CONTR free and clear of all liens except those in favor of a claimant arising out of the acts or omissions of the Department. “Substantially Complete” shall include issuance of a valid Coast Guard Certificate of Inspection to carry passengers, freight, and vehicles, and shall mean complete in every respect except for minor items not affecting safety, commercial utility, or

efficient operation of the Vessel. The parties may agree to stipulate damages in lieu of CONTR completing such minor items and the Contract Price shall be adjusted accordingly by modification.

The CONTR shall make delivery of the vessel a Maine State Ferry Service Facility, mutually agreed upon, in accordance with the Contract in a clean, operational condition and in all respects ready for sea. Upon delivery, all vessel systems shall be in operation and ready for service. The vessel shall be delivered ready to receive liquids, stores, supplies, vehicles, and passengers on revenue producing runs without further maintenance or housekeeping being required. Particular emphasis shall be placed on the condition of all tanks. Special care shall be exercised to see that internal surfaces of tanks, pipelines, and machinery are clean and free from any foreign substance.

The CONTR shall assist MaineDOT in attaining a valid USCG Certificate of Inspection for a 46 CFR Subchapter "H" passenger vessel for the service intended. The contractual requirements shall not be considered to be complete until the homeport USCG Certificate is obtained. CONTR shall be responsible for properly licensed captain/crew. CONTR is responsible for labor, food, and housing for delivery captain, engineer, and one deck hand.

The Department shall furnish to CONTR at the time of delivery a Delivery Certificate. The Delivery Certificate does not relieve CONTR of any of its remaining responsibilities under these presents, but acknowledges that the construction, fitting-out, trials and delivery phases of the Contract have been satisfactorily concluded in all material respects. Furthermore, CONTR shall, before delivery is taken, undertake to give adequate familiarization courses in Rockland, Maine to the Maine State Ferry Service (MSFS) staff on the arrangements and working of the Vessel, her machinery and equipment.

The Vessel shall be finally accepted (Final Acceptance) by the Department after the Department has taken Delivery of the Vessel and is found by the Department to have been constructed in conformity with the Plans and Specifications and the Coast Guard Certificate of Inspection from the homeport OCMI to carry passengers, freight, and vehicles, and any amendments thereto.

987.0.2 FENDERS

The CONTR shall provide adequate fenders for the vessel to safely moor at fueling stations along the delivery route. CONTR shall submit fender design/vendor to MaineDOT for approval.

987.0.3 DEFICIENCIES – Standard Specifications Section 107.9 Project Closeout

The existence of any major uncorrected deficiency which has been caused by the CONTR in the course of completing the Contract and which may affect the safe navigation or the immediate on-line use of the vessel will be sufficient cause to postpone or cancel delivery pending the correction of the item(s) concerned. The existence of a large number of uncorrected minor deficiencies remaining will likewise be cause for postponement or cancellation of delivery until their number has been reduced to a level acceptable to MaineDOT.

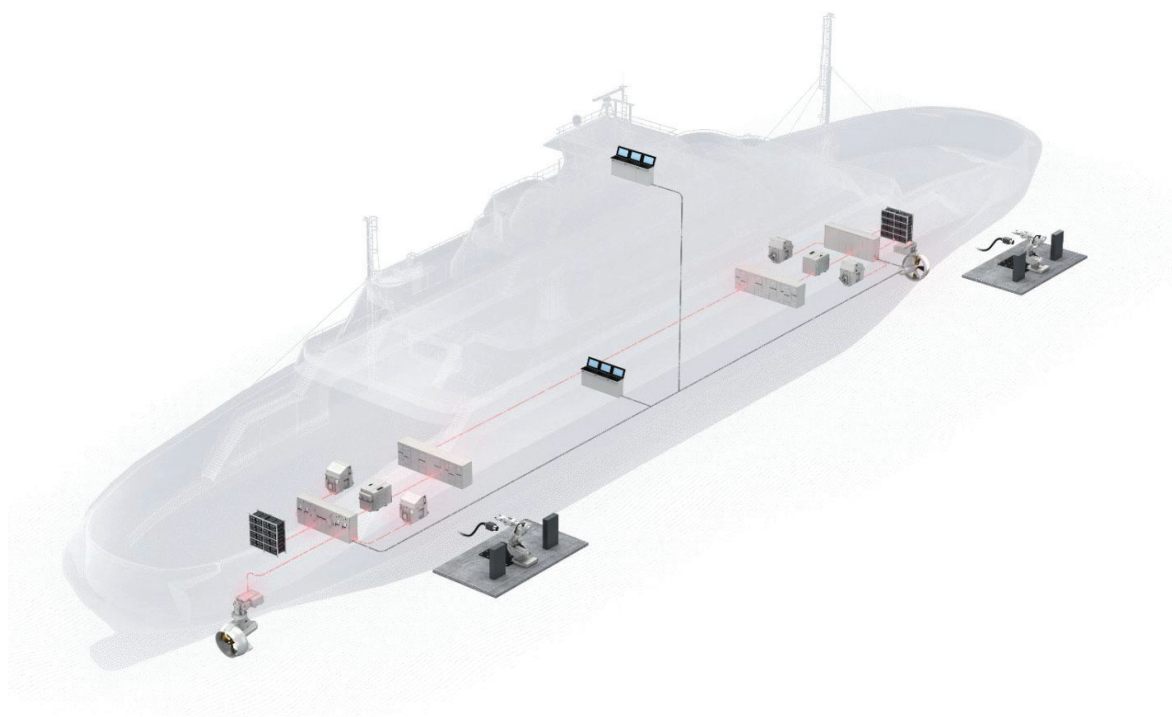
All major system tests shall be completed prior to Sea Trials, and ALL tests shall be completed and submitted to MaineDOT prior to delivery.

END OF TECHNICAL SPECIFICATIONS

ABB MARINE & PORTS PROPOSAL

Maine DOT – Islesboro Ferry

Part 3 - Technical Offer



IMPORTANT NOTICE

This ABB technical offer is preliminary and, as such, is non-binding. It is tendered for discussion only, does not constitute a term to contract, and ABB can, without notice, make any change at ABB's discretion.



Project	Islesboro Ferry
Owner	Maine DOT
Yard	TBD
ABB ref. No.	OPP-20-3650425
Shipyard ref. No	TBD
Document ID	2DNPJSEP76WR-325612387-29090
Date of first issue	05/28/24
Revision	C
Revision date	9/6/2024

1 Revision Table

Rev	Date	Notes
-	05/27/24	Initial submittal
A	06/14/24	Revise SOW language, tables to reflect Maine DOT comments
B	08/16/24	Updated to reflect Maine DOT comments
C	09/06/24	Updated to reflect Maine DOT comments
D		
E		
F		

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3 Definitions and Abbreviations

Terms	Definitions
BOL	Beginning of Life (of the ESS)
CFR	Code of Federal Regulations
DOL	Direct Online
EOL	End of Life (of the ESS)
ESCS	Energy Storage Control System
ESS	Energy Storage System (i.e. batteries)
FAT	Factory Acceptance Testing
HAT	Harbor Acceptance Testing
HMI	Human Machine Interface
IC	Input Circuit
IGBT	Insulated Gate Bipolar Transistor
INU	Inverter Unit
LCL	Type of Sine Filter
LCU	Liquid Cooling Unit
LV	Low Voltage
MCR	Maximum Continuous Rating
ODCG	Onboard DC Grid™
PEMS™	Power and Energy Management System
RBAC	Role Based Access Control
SAT	Sea Acceptance Testing
SCU	Switchboard Control Unit
SOC	State of Charge (of the ESS, varies constantly during use)
SOH	State of Health (of the ESS, which slowly degrades over its useful life)
SWBD	Switchboard
TS	Transport Split
UPS	Uninterruptable Power Supply

4 ABB Offer Overview

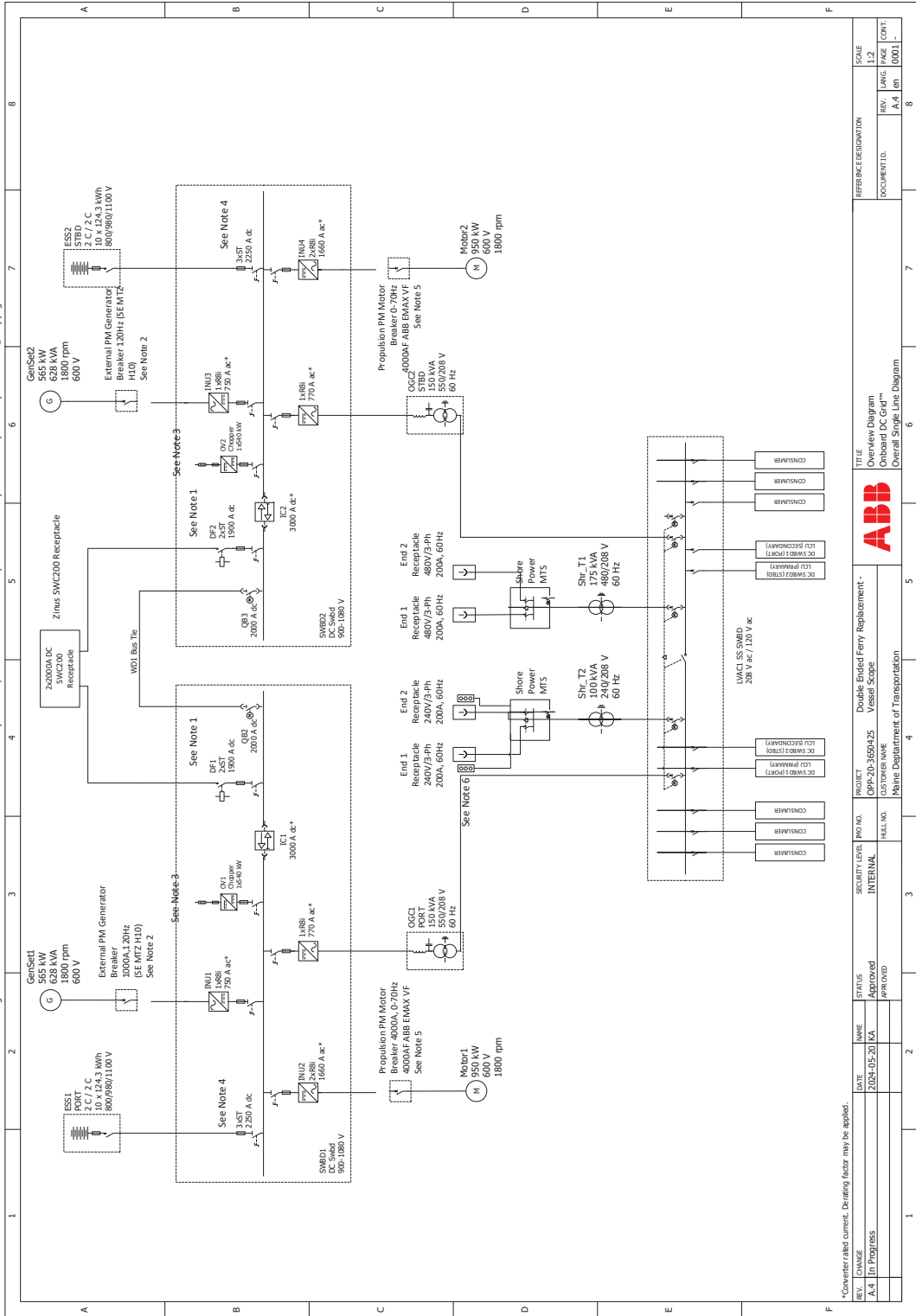
ABB's offer includes the following scope of supply and support activities described in the table below. The table presents an overview of the primary areas of scope included in ABB's offer with more detail provided in the following sections.

Section	Description
ABB Scope of Supply / System Overview	This section describes the solution that has been developed during Functional Design based on requirements development and detailed technical discussions with the Owner and the Design Agent. This design baseline may evolve during the Engineering Support phase with shipyard.
ABB Engineering Support	This section describes the typical minimum engineering deliverables that ABB will provide during the engineering phase of the project, which typically begins just after contract signing. Once a shipyard is selected, ABB will work with the shipyard and/or designer to agree on the Master Deliverables List (MDL) and an associated master schedule.
ABB Support to Acceptance Testing	This section describes the acceptance testing events that have been included in ABB's offer.
Shipyard Commissioning and Vessel Trials	This section describes ABB's site commissioning activities. It also defines and assigns responsibility to the various interfaces between ABB and the shipyard.
ABB Onsite and Classroom Training	This section describes any training that is included in the offer, and/or what training opportunities ABB offers.
Appendices	These sections describe the equipment in ABB's scope and provide preliminary drawings and datasheets. Final equipment specifications may evolve through the design process, though typically changes are modest. Any design changes will be communicated through the MDL deliverables.

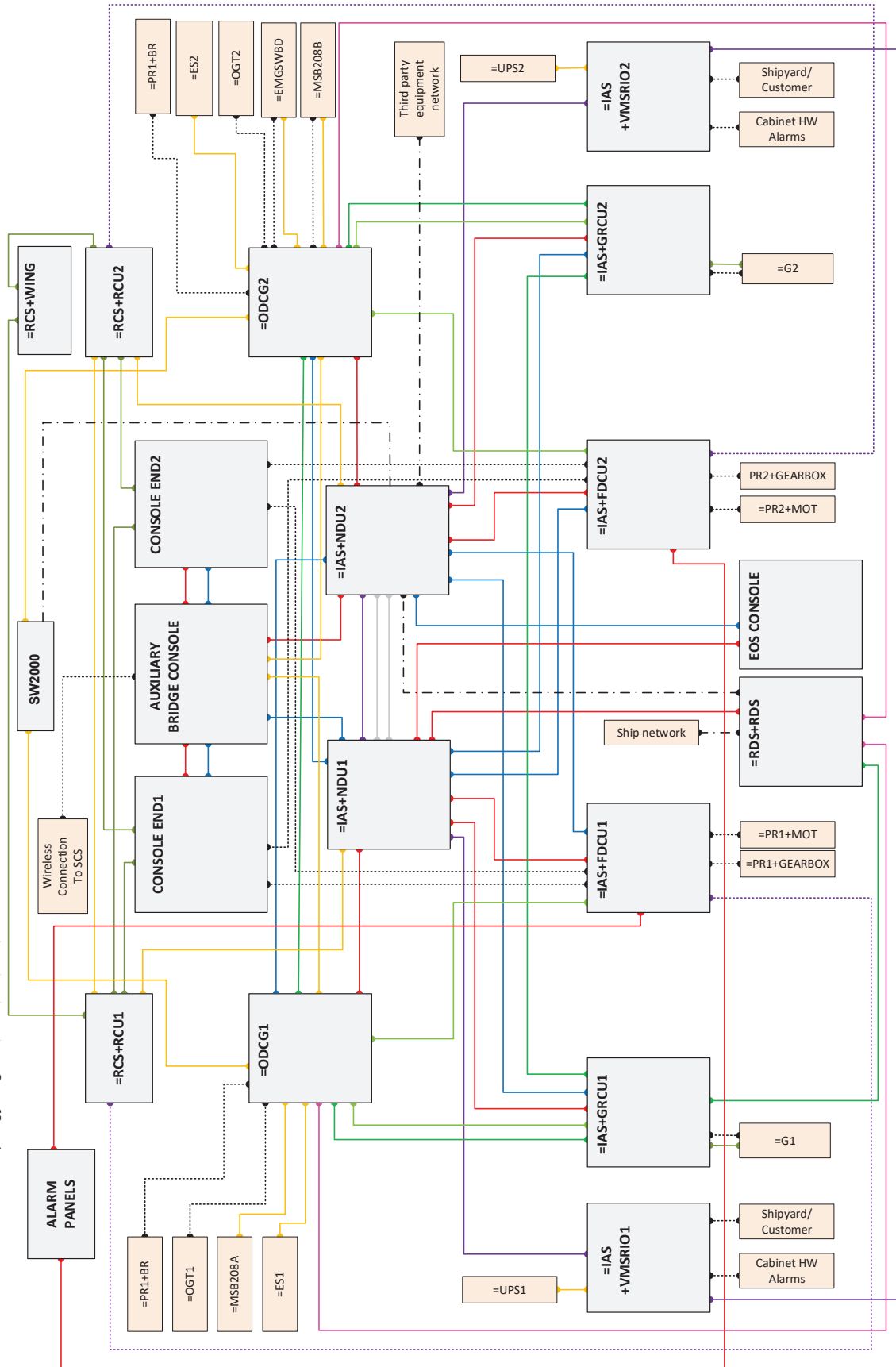
4.1 ABB System Overview

4.1.1 Electrical Single Line Diagram

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4.1.2 Controls and Automation Overall Topology Diagram (PEMS, IAS, RCS)



4.1.3 ABB Equipment List

Equipment Item No	ABB Category	Equipment Name	Detailed Description	Vendor	Qty	Unit	Comment
01.1	01.2	Ship Service Generator Sets			2	pieces	
01.1.1	01	CAT C18 Engine	Diesel Engine, 1800RPM (Fixed), 578kW (775hp), EPA Tier 3, Keel Cooled, Packaged with Alternator on a Skid	Milton CAT	2	pieces	
01.1.2	01.1	565kWe Alternator	1800RPM, 565kWe, Permanent Magnet Generator	Ramme	2	pieces	
01.2	01.2	Emergency Generator Set	Radiator-Cooled	Milton CAT	1	pieces	
03.1	03	208VAC Main Switchboard	208/120V, 30kA, 2-Bus, Low Voltage Main Switchboard	Austevol	1	pieces	
03.2	03	208VAC Emergency Switchboard	208/120V, 30kA, Emergency Switchboard	Austevol	1	pieces	
03.3	03	240V Shore Connect Panel	240V, 3-Ph, Shore Charging Connection Panel	TBC	1	pieces	
03.4	03	480V Shore Connect Panel	480V, 3-Ph, Shore Charging Connection Panel	TBC	1	pieces	
03.5	03	Synchronize Pushbutton Control Panel	Shore Synchronization Control Panel	TBC	2	pieces	
04.1	04	Offgrid Converter Transformer	150kVA, 550/208V Offgrid Transformer with LC Filter	Trafotek	2	pieces	
04.3	04	Shore Transformer 1	100kVA, 240/208V Shore Transformer	TBC	1	pieces	
04.4	04	Shore Transformer 2	175kVA, 480/208V Shore Transformer	TBC	1	pieces	
05.1	05	230V Control Power UPS	10kVA, 230V, 1-Ph, 30-min Marine UPS	ABB	2	pieces	
06.1	06	DC Switchboard 1	AC5880 Multidrive, Liquid Cooled, DC Switchboard	ABB	1	pieces	
06.2	06	DC Switchboard 2	AC5880 Multidrive, Liquid Cooled, DC Switchboard	ABB	1	pieces	
06.3	06	PM Generator Disconnect Cabinet	Standalone Breaker Cabinet, 1000A SE MTZ 1000 Air Circuit Breaker (120Hz)	Austevol	2	pieces	Half height, bottom mounted
06.4	06	PM Motor Disconnect Cabinet	Standalone Breaker Cabinet, 4000A VF SACE Low/Mid Frequency Air Circuit Breaker (0-70Hz)	Austevol	2	pieces	
07.1	07	Energy Storage System	2446kWh, 20 x E2250V1, 1100VDC Energy Storage System	Corvus	1	shipset	
09.1	09	Propulsion Motor	950kW, 600V, 1800 RPM Permanent Magnet Motor	Ramme	2	pieces	
11.1	11	DC Fast Charge Receptacle	SWC200 2x4400A Receptacle	Zinus	1	pieces	
20.1	20/27	PEMS/IAS Single Screen Workstation	800XA PEMS Workstation / Server, Loose Parts (27" Monitor, Panel PC, Trackball and Keyboard)	ABB	2	kit	
20.2	20/27	PEMS/IAS Dual Screen Workstation	800XA PEMS Workstation / Server, Loose Parts (2x 27" Monitor, Panel PC, Trackball and Keyboard)	ABB	1	kit	
20.3	20/27	Alarm Extension Viewer Panel	PP875M Alarm Viewer Panel	ABB	3	pieces	
20.4	20/27	Network Distribution Unit (NDU) / IAS CPU Cabinet	ZERO 8W - Network Hardware and 800M IAS CPU Cabinet	ABB	2	pieces	Bulkhead Mounted Cabinet
20.5	20	PEMS GRCU Control Cabinet	ZERO 8W - 800M CPU and IO Control Cabinet	ABB	2	pieces	Bulkhead Mounted Cabinet
20.6	20	PEMS FDCU Control Cabinet	ZERO 8W - 800M CPU and IO Control Cabinet	ABB	2	pieces	Bulkhead Mounted Cabinet
20.7	20	PEMS SCCS Control hardware	Network switch, wifi access point, power supply	ABB	1	kit	Control parts mounted in bridge console
20.8	20	PEMS ESCS+SCU Control Hardware	CPU and IO Control Cabinet	ABB	1	kit	Control Parts Installed in DC Switchboards
20.9	21	Bridge Remote/Propulsion Control Station	Drop-In Control Panel with Throttle Levers, EOT, Gauges, Controls and Indicators	Kwant	2	kit	Drop-in Panels and Loose Parts for Console
20.10	21	Outdoor Wing Remote/Propulsion Control Station	Drop-In Control Panel with Throttle Levers Gauges, Controls and Indicators, IP67	Kwant	2	kit	Drop-in Panels and Loose Parts for Console
20.11	21	EOS Remote/Propulsion Control Station	Drop-In Control Panel with Throttle Levers, EOT, Gauges, Controls and Indicators	Kwant	2	pieces	Drop-in Panels and Loose Parts for Console
20.12	21	Remote Control Unit Cabinet	CPU Control Cabinet	Kwant	2	pieces	
22.1	22	ABB Remote Diagnostics System Cabinet	ZERO 8W OS Control Cabinet, Fold-Down Keyboard	ABB	1	pieces	
27.1	27	VMS RIO Cabinet	ZERO 8W IO Control Cabinet	ABB	2	pieces	

4.1.4 System Overview

The Onboard DC Grid™ (ODCG) switchboard system is configured as two independent switchboards separated by a bus-tie breaker. Consumers are connected to these two switchboards.

The switchboards will normally be connected to form a closed DC bus. The Power and Energy Management System (PEMS™) will ensure that the number of connected energy sources is optimized. The system is designed to avoid a single fault causing loss of more than 50% power.

4.1.5 Regulatory and Classification Society

The regulatory authority for this vessel is the United States Coast Guard (USCG).

The vessel is unclassified. However, all equipment and systems furnished under this contract shall be designed, constructed, and installed according to ABS Rules for Building and Classing Marine Vessels July 2023 and ABS Rules for Steel Vessels Under 200 feet, as applicable.

4.2 ABB Engineering Support

4.2.1 Project Engineering Schedule and Design Freeze

ABB cannot begin ordering equipment from the respective factories until “design freeze.” To reach design freeze, various milestones must be met and agreed upon. The table below summarizes the key milestones.

ABB Scope (as appropriate)	Key Data to be Agreed Upon with Shipyard for Design Freeze
All equipment	<ul style="list-style-type: none">• Overall Single Line Diagram (ABB deliverable)• ABB Main Equipment List (ABB deliverable)• Equipment Technical Specifications (ABB deliverable) (e.g. cooling, sizing, arrangement, weight)• Mounting / foundation detail
01 Generator	<ul style="list-style-type: none">• Generator voltage
02/03 MV/LV SWBD's	<ul style="list-style-type: none">• Electrical Load List with margins• Loading Factors per Operational Mode
04 Transformer	<ul style="list-style-type: none">• Electrical Load List with margins• Loading Factors per Operational Mode• Largest LVAC switchboard load (which might drive off-grid converter)
05 UPS	<ul style="list-style-type: none">• N/A
06 Drives	<ul style="list-style-type: none">• Inputs for shipyard-supplied direct-connected equipment (e.g. alternators)• Largest LV AC switchboard load (which might drive off-grid converter)
07 ESS	<ul style="list-style-type: none">• N/A
09 MV/LV Motors	<ul style="list-style-type: none">• Hull design inputs as necessary (e.g. steering tube column height, propeller dimensions)
20 Power & Energy Management System (PEMS™)	<ul style="list-style-type: none">• Inputs for shipyard-supplied direct-connected equipment (e.g. alternators)
21 Remote Control System	<ul style="list-style-type: none">• N/A
22 Remote Diagnostic System	<ul style="list-style-type: none">• N/A
26 Cyber Security	<ul style="list-style-type: none">• N/A

ABB Scope (as appropriate)	Key Data to be Agreed Upon with Shipyard for Design Freeze
27 Integrated Alarm System (IAS)	<ul style="list-style-type: none"> Confirm all systems, mimics, functional description, and IO points

NOTE for the following tables: R = Responsible, S = Support, A = Approve, I = Inform

4.2.2 Project Management and Engineering Services

Action	Responsible party	
	Shipyard	ABB
Dedicated ABB Project Manager and Technical Engineering Lead		R
Hardware and software engineering of ABB scope equipment		R
Software Application Engineering of controls as necessary (e.g. Drive Control Unit (DCU), Switchboard Control Unit (SCU)) through Factory Acceptance Test		R
All studies identified in the Master Deliverables List (MDL)		R

4.2.3 Flag State and Class Certification

ABB has estimated engineering hours to support all expected and standard USCG regulatory submittals for which it is responsible. However, as USCG certification can sometimes be unpredictable, ABB reserves the right to request additional compensation if USCG approval activities exceed the scope of ABB's standard offering for reasons beyond its control. The vessel will not be classed.

Action	Responsible party	
	Shipyard	ABB
Communication with and obtaining all approvals from the flag state (e.g., US Coast Guard)	R	S
Demonstrate compliance with all USCG requirements for ABB's scope of equipment and support the shipyard/designer with the necessary information it needs to achieve flag state certification		R

4.2.4 Cabling

Action	Responsible party	
	Shipyard	ABB
System block diagrams stating all cables to/from ABB equipment		R
Connection Details drawing for each ABB scope equipment indicating cable termination details for power cables		R
System block diagrams stating cable type (e.g. ethernet, CAT 6) for control/data cables		R

Action	Responsible party	
	Shipyard	ABB
For Onboard DC Grid™/Onboard Microdrive, manuals indicating cable type requirements		R
Single line diagram with rated power and voltage level for equipment		R
All cable sizing between equipment (including lengths, wire routing diagrams, voltage drop calculations, cable numbering, number of conductors per cable) (based on ABB drawings above)	R	
Cable schedules (based on shipyard's cable sizing)	R	
Cable termination schedules (based on ABB drawings above)	R	

4.2.5 Integrated Alarm System (IAS)

Action	Responsible party	
	Shipyard	ABB
Basic integration of ABB Integrated Automation System (IAS) with the Main Switchboard		R
Basic Alarm and Monitoring of motor(s) powered by the ABB's drives, (e.g.: Load reduction at high temperature in windings)		R
BUS communications interface to alarm system (IAS, IACMS) (Bus communication type to be agreed upon)		R
Basic Integration with remote control system(s) of the thruster frequency converter(s) and soft starter(s)		R
Basic Integration with Integrated Alarm System (IAS) of the thruster frequency converter(s)		R
Design, procurement, and installation of all sensors, hardware, cabling, and other equipment for non-ABB scope vessel system (e.g., cooling water, HVAC) and sharing schematic drawings and IO information with ABB for integration with IAS	R	
Add non-ABB scope vessel systems (e.g. cooling water, HVAC) into IAS display on Operation Workstations (OWS)		R

4.2.6 Documentation / Master Deliverables List (MDL)

ABB's Master Deliverables List (MDL) defines the project deliverables to the shipyard. This list varies for each project but generally consists of the following only as far as it pertains to ABB's scope of supply unless otherwise stated.

Drawing list will be reviewed and agreed between ABB and the shipyard. All submittals to USCG are to be done by the shipyard.

Drawing Title	Per	Typical for USCG Approval	Comments
Electrical System Scope			
Overall Single Line Diagram	Shipset	True	Electrical single line diagram showing principal topology of ABB equipment scope and interfaces to major non-ABB scope equipment. This drawing may evolve as needed until design freeze.
Electrical System Philosophy			
	Shipset	True	Document to describe the various operational modes of the vessel's propulsion and power system.
Fault Current Calculations and Protective Device Coordination Analysis - ODCG SWBD	Shipset	True	Short circuit calculation and selectivity are limited to primary components of the main switchboard and low voltage AC systems. Voltage drop calculation starting heavy consumers studies, selectivity studies and coordination studies for the Main Switchboard in ABB Scope of Supply
Fault Current Calculations and Protective Device Coordination Analysis - LV System	Shipset	True	
Selectivity Study - LV System	Shipset	True	
Connection Diagrams	Shipset	False	Showing terminal mounting points and cables for all equipment in ABB's scope of supply
THD in AC Distribution System	Shipset	False	Total Harmonic Distortion
Vital Systems LV DC Power Distribution Load Analysis	Shipset	True	
Parameter Setting list	Shipset	False	
Energy Storage System - Energy Balance Study	Shipset	False	
Regulatory			
Failure Modes and Effects Analysis (FMEA) Input	Shipset	True	As per USCG CFR requirements, ABB to provide necessary supporting documentation for ABB scope of supply equipment for shipyard to develop and seek approval of the project FMEA.
Design Verification Test Procedure (DVTP) Input	Shipset	True	As per USCG CFR requirements, ABB to provide necessary supporting documentation for ABB scope of supply equipment for shipyard to develop and seek approval of the project DVTP.
Periodic Safety Test Procedures (PSTP) Input	Shipset	True	As per USCG CFR requirements, ABB to provide necessary supporting documentation for ABB scope of supply equipment for shipyard to develop and seek approval of the project PSTP.
Equipment Drawings and Manuals			
Main Equipment List	Shipset	False	Summary of ABB scope equipment
Consumer List	Shipset	False	Summary of ABB scope equipment power consumption
Part List	Shipset	False	
Heat Dissipation to Air and Water	Shipset	False	Summary of ABB scope equipment heat dissipation data
Equipment Arrangement Drawings	Equipment, as applicable	False	All key dimensional and mechanical drawings including pertinent interfaces (e.g. piping connections, foundations, system interface requirements, wet/dry weights, center of gravity, electrical connection types / locations, lifting points, heat dissipation, airborne noise estimates, and the required equipment maintenance envelopes).
Equipment Technical Specification	Equipment, as applicable	False	
Equipment Functional Description	Equipment, as applicable	Some (e.g. ESS, Onboard DC Grid™)	
Cables and Grounding Guideline	Onboard DC Grid™ / Onboard Microdrive	False	

Drawing Title	Per	Typical for USCG Approval	Comments
Equipment Control Wiring Diagram	Equipment, as applicable	Typically only for LV Switchboard	Internal control wiring diagram of equipment.
Equipment Interface Power Block Diagram	Equipment, as applicable	True	Power interfaces between equipment.
Equipment Interface Automation and Control Block Diagram	Equipment, as applicable	True	Automation and control interfaces between equipment.
Automation & Controls – General			
System Topology	Shipset	True	
Interface Guide	Shipset	False	
System 800xA Function Description	Shipset	False	
Automation System Block Diagram	Automation System, as applicable	True	e.g. IAS Block Diagram, PEMS™ Block Diagram
Automation & Controls – Integrated Automation System (IAS)			
IO List	Shipset	False	Complete list of I/O points for all automation systems
Operator Workstation & Server (OWS)	Shipset	False	Interface monitor and computer for shipyard-supplied engineering operating station.
HMI Graphic displays	Shipset	False	Human Machine Interface mimic drawings for different ship systems.
History Server	Shipset	False	
Alarm Printer	Shipset	False	
IAS Function Description	Shipset	False	
IAS HAT Test Procedure	Shipset	False	Hardware Acceptance Test
IAS HAT Test Report	Shipset	False	Hardware Acceptance Test
IAS SAT Test Procedure	Shipset	False	Software Acceptance Test
IAS SAT Test Report	Shipset	False	Software Acceptance Test
IAS Change Management Workflow	Shipset	False	
Automation & Controls – Marine Cyber Security			
Marine Cyber Security Function Description	Shipset	False	
Marine Cyber Security System Information	Shipset	False	
Marine Cyber Security Internal Handover Check List	Shipset	False	
Marine Cyber Security External Handover Check List	Shipset	False	
Marine Cyber Security Review Check List	Shipset	False	
Marine Cyber Security Testing Procedures	Shipset	False	
Automation & Controls – Power & Energy Management System (PEMS™)			
Power & Energy Management System Function Description	Shipset	True	
Power & Energy Management System Block Diagram	Shipset	True	
Power & Energy Management System Hardware Acceptance Test (HAT) Procedure	Shipset	False	
Power & Energy Management System Hardware Acceptance Test (HAT) Report	Shipset	False	

Drawing Title	Per	Typical for USCG Approval	Comments
Power & Energy Management System Software Acceptance Test (SAT) Procedure	Shipsset	False	
Power & Energy Management System Software Acceptance Test (SAT) Report	Shipsset	False	
Automation & Controls – Propulsion Control System (PCS)			
Propulsion Control Function Description	Shipsset	True	
Propulsion Control System Block Diagram	Shipsset	True	
Automation & Controls – Remote Control System (RCS)			
Remote Control System Function Description	Shipsset, as applicable	True	
Automation & Controls – Remote Diagnostic System (RDS)			
ABB Ability™ Marine RDS - Functional Description	Shipsset	False	
RDS Block Diagram	Shipsset	False	
Factory Acceptance Testing			
Factory Acceptance Test (FAT) Procedure	Equipment or System, as applicable	False	Factory Acceptance Test plan for each piece of ABB scope equipment.
Factory Acceptance Test (FAT) Report	Equipment or System, as applicable	False	Factory Acceptance Test report for each piece of ABB scope equipment.
Commissioning and Site Support			
Pre-Commissioning Check List - signed by yard	Equipment / System	False	Checklist of expected shipyard activities to have been complete before ABB can begin commissioning each piece of ABB scope equipment.
Commissioning Procedures	Equipment / System as applicable	False	ABB's commissioning activities for each ABB scope of supply equipment.
Commissioning Report	Equipment / System as applicable	False	ABB's commissioning test report for each ABB scope of supply equipment.
Spare Parts and Special Tools	Shipsset	False	A list of recommended spare parts and/or tools where provided by the equipment supplier.
Vessel Trials			
Dock Acceptance Test (DAT) Procedure	Equipment / System, as applicable	False	
Sea Trial Acceptance Test (SAT) Procedure	Equipment / System, as applicable	False	
Sea Trial Report	Shipsset	False	

4.3 Program Governance Assumptions

This section describes the Program Governance model included in this offer.

4.3.1 Submittals to Shipyard

ABB has planned for all submitted documents and drawings to undergo one fifteen (15) day review cycle by the shipyard. In addition, certain documents (ex: operational and functional descriptions) may require review/approval by Maine DOT.

5.3.2 Technical Meeting Allowance

An initial kickoff meeting will be held after contract execution for this scope of work and before the start of on-site construction. Attendees will include the following stakeholders:

- Project Manager(s) for ABB, Customer and Vessel Owner
- Project Engineering Team (ABB and Designer)
- Shipyard Representatives
- Any additional personnel requested by the customer

In accordance with Maine DOT's specifications, progress meetings with stakeholders will be held periodically at a mutually agreed interval of no more than one month. Additional technical discussions can be facilitated as necessary. Minutes will be taken by a designated party from the project team and distributed for all technical meetings.

5.3.3 Formal Design Review Meetings

Prior to the freeze of any design elements, a formal meeting will be held with stakeholders. This is in addition to the above submittal process.

4.4 ABB Support to Acceptance Testing

This section describes the Acceptance Testing that has been included in the offer.

4.4.1 Factory Acceptance Test (FAT)

Action	Responsible party	
	Shipyard	ABB
Factory Acceptance Test of Equipment in ABB Scope of Supply		R
Travel arrangements for any shipyard, owner, Class, or regulatory personnel to equipment factory	R	

4.4.2 Factory Acceptance Test List (FAT)

Equipment Category	Equipment Description	FAT Included (Y/N)	Witnessed ¹ (W) or Report Review (R)	Customer option to Witness in person (Y/N/Virtually)
01.1 Engines	CAT C18 EPA Tier 3, Ship Service Gensets, PM	Y	W	Y
01.1 Engines	550kW PM Generator	Y	R	N
01.2 Gensets	CAT C7.1 Air-Cooled Emergency Genset	Y	W	Y
03 LV Switchboards	208VAC Main Switchboard	Y	W	V
03 LV Switchboards	208VAC Emergency Switchboard	Y	W	V
03 LV Switchboards	PM Motor and PM Generator Disconnect Cabinets	Y	W	V
04 Transformers	150kVA, 480/480V Offgrid Transformer with LC Filter	Y	W	V
04 Transformers	200kVA, 240/480V Shore Transformer	Y	W	V
04 Transformers	12kVA 208/230V 1-Phase UPS Transformer	N	n/a	n/a
05 UPS	10kVA, 1-Ph, 30-min Marine UPS	Y	W	V
06 Drives	Onboard DC Switchboard	Y	W	Y
06 Drives	Input Circuit	Y	W	N
07 ESS	Corvus Orca Modules	Y	R	N
07 ESS	Corvus Orca PDM	Y	W	V
09 LV Motors	950kW PM Propulsion Motor	Y	R	N

20 (PEMS)	ABB PEMS Software ²	Y	W	Y
20 (PEMS)	ABB PEMS Cabinets	Y	W	N
21 Remote Control System	Kwant RCS (Cabinets, levers and control panels)	Y	W	Y
22 Remote Diagnostic System	ABB Remote Diagnostics System	N	N	N
27 Integrated Alarm System (IAS)	ABB IAS Software	Y	W	Y

Notes:

- 1) At ABB's description, ABB may witness subcontractor FAT Tests virtually as a strategy to reduce travel and associated emissions.
- 2) ABB requests that Operator's Captain/Engineer attend PEMS Software FAT (held in USA) to gain an understand of the system functionality and interface, and to provide feedback prior to commissioning.

4.4.3 Shipyard Planning and Accommodations

Action	Responsible party	
	Shipyard	ABB
Site office for ABB and office facilities for minimum 2 personnel while ABB is on site with ability to expand to 8 personnel during commissioning. Office to include furniture, lockers, internet connections, restroom, kitchen, and cleaning.	R	
Safe working conditions for commissioning engineers	R	
ABB commissioning schedule (well before commissioning phase starts). The schedule will take account for shipyard milestones, duration of ABB commissioning activities, required testing times for ABB equipment and system, as well as required testing times for the yard to achieve Vessel Trial readiness. To ensure efficient use of resources, shipyard must present a completed report (e.g. "pre-commissioning checklist") confirming completion of its activities before ABB can initiate travel for its Commissioning team. ABB commissioning starts when installation, assembly, and cabling connections of equipment are completed, power is available, and facilities are made ready by the Shipyard.	R	S

4.4.4 Equipment Handling, Storage, and Physical Installation

Action	Responsible party	
	Shipyard	ABB
Lifting, hauling, and landing ABB equipment onboard	R	
Storage instructions for ABB equipment		R
Installation instructions of ABB equipment		R

Action	Responsible party	
	Shipyard	ABB
Installation of ABB equipment	R	
Rigging or disconnecting any non-ABB equipment that might interfere with the ABB scope (e.g. mooring winches, electrical or hydraulic cabinets)	R	
Welding or cutting hull	R	
Any supporting structure for rigging parts	R	
Storage, protection, and preservation of ABB equipment after delivery to the shipyard.	R	
Installation, preparation, flushing, etc. of support systems (e.g. water cooling, exhaust, lubrication)	R	
Pipe flushing and pressure testing with ABB's approval	R	

4.4.5 Cable Connections

Action	Responsible party	
	Shipyard	ABB
All cable installation and cable terminations to and between ABB equipment	R	
Cable glands on Onboard DC Grid™ (Roxtec or similar)		R
Cable connection testing (including megger testing)	R	
Interconnections to external drives panels	R	
Cables and accessories for external interconnection of equipment	R	

4.4.6 ABB Equipment Installation Verification and Set-to-Work

Action	Responsible party	
	Shipyard	ABB
Check cable work finished	R	
Check cubicles installed mechanically	R	
Check cubicle earthing connected in every cubicle	R	
Check all cabling installed and connected (both ends) and tested (including megger)	R	
Check cooling water pipes connected and pressure tested	R	
Checking of critical points before startup		R

4.4.7 Power feeds

Action	Responsible party	
	Shipyard	ABB
Low voltage shore power available	R	
Supply voltage for UPS available	R	
240 VAC / 440 VAC voltage available	R	
Power supply solution for pre-charging drives / DC Link bus	R	S
Checking of critical points before startup		R

4.4.8 Equipment Preparation

Action	Responsible party	
	Shipyard	ABB
Steel work finished	R	
Insulation work finished	R	
Electrical rooms cleaned and painted	R	
Floors of the electrical room ready	R	
Rubber mats in Main Switchboard rooms	R	

Action	Responsible party	
	Shipyard	ABB
Working lights in operation	R	
Ventilation working	R	
Safety level of operations in compliance with Shipyard HSSE requirements.	R	
Cleaning of ABB equipment	R	
Install/pull cables	R	

4.4.9 Commissioning Kick-Off Meeting

Action	Responsible party	
	Shipyard	ABB
Commissioning responsibilities confirmed	R	A
Safety regulations of ABB and YARD confirmed	R	A
Contact persons of ABB and YARD confirmed	R	A
Site office and dressing room arranged for ABB	R	I
ABB Reporting (ABB Commissioning Work Report)		R

4.4.10 Commissioning

Action	Responsible party	
	Shipyard	ABB
Commissioning of ABB equipment (after the prerequisites are fulfilled and as specified above)		R
Functional testing ABB equipment		R
If shipyard has any special testing requirements for the batteries (as applicable), any pre-charging (to occur only after ABB has successfully commissioned ESS and handed over control of the system to the shipyard)	R	
Testing of physical interfaces between ABB equipment and other equipment	R	
Operation of commissioned equipment	R	

Action	Responsible party	
	Shipyard	ABB
Waiting time by ABB Commissioning engineers	R	
Earthing system	R	
Assistance to the other system suppliers only insofar as interconnection test is required with ABB scope equipment.		R

4.5 Vessel Trials

4.5.1 Dock Trials Acceptance Tests (DAT)

Action	Responsible party	
	Shipyard	ABB
Dock Trial test plans for ABB equipment		R
Main power available continuously	R	
Propulsion drives operational	S	R
Propulsion control system operational	S	R
Possibility to turn propellers	R	
Person outside of vessel to avoid detachment of vessel	R	
Suitable number of mooring ropes	R	
Dock Trial Acceptance Tests accepted	R	A

4.5.2 Vessel Trial Acceptance Tests (VAT)

Action	Responsible party	
	Yard	ABB
Vessel Trial test plans for ABB equipment		R
ABB scope equipment verification activities	R	S
Training or coaching regarding the operations of new system after sea trial	R	S
Drydock fees	R	
FMEA/DVTP verification activities	R	S

4.6 ABB Onsite and Classroom Training

ABB Marine Academy training allows operators to become more proactive in operating and maintaining equipment, which results in increased availability and less downtime. Course participants can visit ABB factories or workshops and get answers from the engineers who designed the equipment and systems themselves.

Safety - Training supports the crew toward safe operations, with ability to get the most of their equipment in all situations.

Performance - Marine Academy training for ABB equipment allows the highest operational performance leading towards more efficient and sustainable operations.

Quality - Knowledge is power; with customized courses from Marine Academy your crew reaches most safe, efficient and sustainable operations.

Here is an applicable list of available standard and customizable ABB Marine Academy classes:

- HV Safety course, Management and operational level STCW approved
- Power Distribution system
- Propulsion drive systems
- Propulsion simulation
- Marine Machines
- Powerplant training
- Automation of 800xA
- Advisory software suite
- Onboard DC Grid™
- ACS880 Drives
- eLearnings

5 Technical Solution Specifications

ABB has identified sections of the RFQ considered to be “general requirements,” which generally affect some or all equipment aboard. These expectations will be communicated to the various suppliers.

<u>Appendix</u>	<u>Specification</u>
01	Generators
01.1	Engines
03	LV Switchboards
04	Transformers
05	UPS
06	Drives
07	ESS
09	LV Motors
11	Shore Charging System (Receptacle only)
20-27	PEMS-IAS
21	RCS
22	RDS
26	Cybersecurity

Appendix A. Federally Required and Other Model Contract Clauses

- A.1 ACCESS TO RECORDS AND REPORTS.....
- A.2 BONDING REQUIREMENTS.....
- A.3 BUS TESTING.....**NOT APPLICABLE TO THIS PROJECT**.....
- A.4 BUY AMERICA REQUIREMENTS.....
- A.5 CARGO PREFERENCE REQUIREMENTS.....
- A.6 CHARTER SERVICE..... **NOT APPLICABLE TO THIS PROJECT**.....
- A.7 CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT...
- A.8 CIVIL RIGHTS LAWS AND REGULATIONS.....
- A.9 DISADVANTAGED BUSINESS ENTERPRISE (DBE).....
- A.10 EMPLOYEE PROTECTIONS.....
- A.11 ENERGY CONSERVATION.....
- A.12 FLY AMERICA.....
- A.13 GOVERNMENT-WIDE DEBARMENT AND SUSPENSION.....
- A.14 LOBBYING RESTRICTIONS.....
- A.15 NO GOVERNMENT OBLIGATION TO THIRD PARTIES.....
- A.16 PATENT RIGHTS AND RIGHTS IN DATA... **NOT APPLICABLE TO THIS PROJECT**
- A.17 PRE-AWARD & POST-DELIVERY AUDITS OF ROLLING STOCK PURCHASES...
NOT APPLICABLE TO THIS PROJECT
- A.18 PROGRAM FRAUD & FALSE OR FRAUDULENT STATEMENTS & RELATED ACTS.....
- A.19 PUBLIC TRANSPORTATION EMPLOYEE PROTECTIVE ARRANGEMENTS.....
NOT APPLICABLE TO THIS PROJECT
- A.20 RECYCLED PRODUCTS.....
- A.21 SAFE OPERATION OF MOTOR VEHICLES.....
- A.22 SCHOOL BUS OPERATIONS..... **NOT APPLICABLE TO THIS PROJECT**.....
- A.23 SEISMIC SAFETY.....
- A.24 SUBSTANCE ABUSE REQUIREMENTS..... **NOT APPLICABLE TO THIS PROJECT**...
- A.25 TERMINATION.....
- A.26 VIOLATION AND BREACH OF CONTRACT.....

A.1 ACCESS TO RECORDS AND REPORTS

49 U.S.C. § 5325(g)

2 C.F.R. § 200.333

49 C.F.R. part 633

Applicability to Contracts

The record keeping and access requirements apply to all contracts funded in whole or in part with FTA funds. Under 49 U.S.C. § 5325(g), FTA has the right to examine and inspect all records, documents, and papers, including contracts, related to any FTA project financed with Federal assistance authorized by 49 U.S.C. Chapter 53.

Flow Down

The record keeping and access requirements extend to all third party contractors and their contracts at every tier and sub-recipients and their subcontracts at every tier.

Model Clause/Language

There is no required language for record keeping and access requirements. Recipients can draw on the following language for inclusion in their federally funded procurements.

Access to Records and Reports

- a. Record Retention. The Contractor will retain, and will require its subcontractors of all tiers to retain, complete and readily accessible records related in whole or in part to the contract, including, but not limited to, data, documents, reports, statistics, sub-agreements, leases, subcontracts, arrangements, other third party agreements of any type, and supporting materials related to those records.
- b. Retention Period. The Contractor agrees to comply with the record retention requirements in accordance with 2 C.F.R. § 200.333. The Contractor shall maintain all books, records, accounts and reports required under this Contract for a period of at not less than three (3) years after the date of termination or expiration of this Contract, except in the event of litigation or settlement of claims arising from the performance of this Contract, in which case records shall be maintained until the disposition of all such litigation, appeals, claims or exceptions related thereto.
- c. Access to Records. The Contractor agrees to provide sufficient access to FTA and its contractors to inspect and audit records and information related to performance of this contract as reasonably may be required.
- d. Access to the Sites of Performance. The Contractor agrees to permit FTA and its contractors access to the sites of performance under this contract as reasonably may be required.

A.2 BONDING REQUIREMENTS

2 C.F.R. § 200.325

31 C.F.R. part 223

Applicability to Contracts

Bonds are required for all construction or facility improvement contracts and subcontracts exceeding the simplified acquisition threshold. FTA may accept the bonding policy and requirements of the recipient if FTA has determined that the Federal interest is adequately protected. If such a determination has not been made, the following minimum requirements apply:

- a. A bid guarantee from each bidder equivalent to five percent of the bid price. The “bid guarantee” must consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of the bid, execute such contractual documents as may be required within the time specified.
- b. A performance bond on the part of the contractor for 100 percent of the contract price. A “performance bond” is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.
- c. A payment bond on the part of the contractor for 100 percent of the contract price. A “payment bond” is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

Flow Down

These requirements extend to all third party contractors and their contracts at every tier and sub-recipients and their subcontracts at every tier that exceed the simplified acquisition threshold.

Model Clauses/Language

There is no required language for bonding requirements. Recipients can draw on the following language for inclusion in their federally funded procurements.

Bond Requirements

Bid Guarantee

Bidders shall furnish a bid guaranty in the form of a bid bond, or certified treasurer’s or cashier’s check issued by a responsible bank or trust company, made payable to the RECIPIENT. The amount of such guaranty shall be equal to **\$\$\$\$** or **XX%** of the total bid price.

In submitting this bid, it is understood and agreed by bidder that the RECIPIENT reserves the right to reject any and all bids, or part of any bid, and it is agreed that the Bid may not be withdrawn for a period of [90] days subsequent to the opening of bids, without the written consent of RECIPIENT.

It is also understood and agreed that if the undersigned bidder should withdraw any part or all of his bid within [90] days after the bid opening without the written

consent of the RECIPIENT, or refuse or be unable to enter into this Contract as provided above, or refuse or be unable to furnish adequate and acceptable Performance and Payment Bonds, or refuse or be unable to furnish adequate and acceptable insurance, as provided above, it shall forfeit its bid guaranty to the extent RECIPIENT'S damages occasioned by such withdrawal, or refusal, or inability to enter into an agreement, or provide adequate security thereof.

It is further understood and agreed that to the extent the defaulting bidder's bid guaranty shall prove inadequate to fully recompense RECIPIENT for the damages occasioned by default, then the undersigned bidder agrees to indemnify RECIPIENT and pay over to RECIPIENT the difference between the bid guarantee and RECIPIENT'S total damages so as to make RECIPIENT whole.

The undersigned understands that any material alteration of any of the above or any of the material contained herein, other than that requested will render the bid unresponsive.

Performance Guarantee

A Performance Guarantee in the amount of 100% of the Contract value is required by the Recipient to ensure faithful performance of the Contract. Either a Performance Bond or an Irrevocable Stand-By Letter of Credit shall be provided by the Contractor and shall remain in full force for the term of the Agreement. The successful Bidder shall certify that it will provide the requisite Performance Guarantee to the RECIPIENT within ten (10) business days from Contract execution. The RECIPIENT requires all Performance Bonds to be provided by a fully qualified surety company acceptable to the RECIPIENT and listed as a company currently authorized under 31 C.F.R. part 22 as possessing a Certificate of Authority as described hereunder. RECIPIENT may require additional performance bond protection when the contract price is increased. The increase in protection shall generally equal 100 percent of the increase in contract price. The RECIPIENT may secure additional protection by directing the Contractor to increase the amount of the existing bond or to obtain an additional bond.

If the Bidder chooses to provide a Letter of Credit as its Performance Guarantee, the Bidder shall furnish with its bid, certification that an Irrevocable Stand-By Letter of Credit will be furnished should the Bidder become the successful Contractor. The Bidder shall also provide a statement from the banking institution certifying that an Irrevocable Stand-By Letter of Credit for the action will be provided if the Contract is awarded to the Bidder. The Irrevocable Stand-By Letter of Credit will only be accepted by the RECIPIENT if:

1. A bank in good standing issues it. The RECIPIENT will not accept a Letter of Credit from an entity other than a bank.
2. It is in writing and signed by the issuing bank.
3. It conspicuously states that it is an irrevocable, non-transferable, "standby" Letter of Credit.
4. The RECIPIENT is identified as the Beneficiary.
5. It is in an amount equal to 100% of the Contract value. This amount must be in U.S. dollars.
6. The effective date of the Letter of Credit is the same as the effective date of the Contract
7. The expiration date of the Letter of Credit coincides with the term of this Agreement.

8. It indicates that it is being issued in order to support the obligation of the Contractor to perform under the Contract. It must specifically reference the Contract between the RECIPIENT and the Contractor the work stipulated herein.

The issuing bank's obligation to pay will arise upon the presentation of the original Letter of Credit and a certificate and draft (similar to the attached forms contained in Sections X and Y) to the issuing bank's representative at a location and time to be determined by the parties. This documentation will indicate that the Contractor is in default under the Contract.

Payment Bonds

A Labor and Materials Payment Bond equal to the full value of the contract must be furnished by the contractor to Recipient as security for payment by the Contractor and subcontractors for labor, materials, and rental of equipment. The bond may be issued by a fully qualified surety company acceptable to (Recipient) and listed as a company currently authorized under 31 C.F.R. part 223 as possessing a Certificate of Authority as described thereunder.

Sample Bond Certifications

Performance Guarantee Certification

The undersigned hereby certifies that the Bidder shall provide a Performance Guarantee in accordance with the Specifications.

Designate below which form of Performance Guarantee shall be provided:

_____ Performance Bond

_____ Irrevocable Stand-By-Letter of Credit

BIDDER'S NAME: _____

AUTHORIZED SIGNATURE: _____

TITLE: _____

DATE: _____

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

that _____

(Insert full name and address and legal title of Contractor) as Principal, hereinafter called Contractor, and _____

(Insert full name and address or legal title of Surety) as Surety, hereinafter called Surety, are held and firmly bound unto RECIPIENT as Oblige, hereinafter called Authority, in the amount of _____ Dollars (\$____) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____, 20____, entered into a contract with the RECIPIENT for Contract No. _____, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the RECIPIENT.

Whenever Contractor shall be, and is declared by the RECIPIENT to be in default under the Contract, the RECIPIENT having performed RECIPIENT'S obligations thereunder, the Surety may promptly remedy the default, or shall promptly

1. Complete the Contract in accordance with its terms and conditions, or
2. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the RECIPIENT elects, upon determination by the RECIPIENT and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and the Authority, and make available as Work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, the amount set forth in the first paragraph hereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by the RECIPIENT to Contractor under the Contract and any amendments thereto, less the amount properly paid by the RECIPIENT to Contractor.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the RECIPIENT or the heirs, executors, administrators or successors of the RECIPIENT.

Signed and sealed this _____ day of _____ 20 ____ .

WITNESS

PRINCIPAL

(SEAL)

(Title)

WITNESS

SURETY

(SEAL)

(Title)

Attach hereto proof of authority of officers or agents to sign bond.

Irrevocable Stand-By Letter Of Credit Certificate

The undersigned states that he/she is _____ of the
(Title)

_____ (The "Beneficiary") and hereby
(Name of Beneficiary)

Certifies on behalf of the Beneficiary to _____ (the "Bank), with
(Name of Issuing Bank)

Reference to Irrevocable Standby Letter of Credit No. _____ Issued by the Bank (the "Letter of Credit"), that:

1. The undersigned is duly authorized to execute and deliver this certificate on behalf of the Beneficiary.
2. The Beneficiary is making a drawing under the Letter of Credit.
3. An Event of Default has occurred under Contract No. _____.
4. The amount of the draft presented with this certificate does not exceed the total maximum amount drawable today under the Letter of Credit as provided therein.

IN WITNESS WHEREOF, this certificate is executed this ____ day of _____, 20 ____ .

(NAME OF BENEFICIARY)

By: _____

Its: _____

Bank Draft

FOR VALUE RECEIVED

Pay on presentment to _____ the sum of _____
(Name of Beneficiary) Dollars (\$)

Charge the Account of _____ Irrevocably Standby Letter of
(Name of Issuing Bank)

Credit No. _____ Dated: 20____.

To _____
(Name of Issuing Bank)

NAME OF BENEFICIARY

By _____

Its _____

A.3 BUS TESTING

49 U.S.C. § 5318(e)

49 C.F.R. part 665

Applicability to Contracts

The Bus Testing requirements pertain only to the purchase or lease of any new bus model, or any bus model with a major change in configuration or components to be acquired or leased with funds obligated by FTA. Recipients are responsible for determining whether a vehicle to be acquired requires full or partial testing or has already satisfied the bus testing requirements by achieving a passing test score in accordance with 49 C.F.R. part 665. Recipients must certify compliance with FTA's bus testing requirements in all grant applications for FTA funding for bus procurements.

Flow Down

There is no flow down requirement for Bus Testing.

Model Clause/Language

The operator of the bus testing facility is required to provide the resulting test report to the entity that submits the bus for testing. The manufacturer or dealer of a new bus model or a bus produced with a major change in component or configuration is required to provide a copy of the corresponding full bus testing report and any applicable partial testing report(s) to the recipient during the point in the procurement process specified by the recipient, but in all cases before final acceptance of the first bus by the recipient. The complete bus testing reporting requirements are provided in 49 C.F.R. § 665.11. Although no specific certification and bus testing language is required, recipients can draw on the following language for inclusion in their federally funded procurements.

Bus Testing

The Contractor [Manufacturer] agrees to comply with the Bus Testing requirements under 49 U.S.C. 5318(e) and FTA's implementing regulation at 49 C.F.R. part 665 to ensure that the requisite testing is performed for all new bus models or any bus model with a major change in configuration or components, and that the bus model has achieved a passing score. Upon completion of the testing, the contractor shall obtain a copy of the bus testing reports from the operator of the testing facility and make that report(s) publicly available prior to final acceptance of the first vehicle by the recipient.

A.4 BUY AMERICA REQUIREMENTS

49 U.S.C. 5323(j)

49 C.F.R. part 661

Applicability to Contracts

FTA's Buy America law and regulations apply to projects that involve the purchase of more than \$150,000 of iron, steel, manufactured goods, or rolling stock to be delivered to the recipient to be used in an FTA assisted project. FTA cautions that its Buy America regulations are complex. Recipients can obtain detailed information on FTA's Buy America regulation at: <https://www.transit.dot.gov/buyamerica> The Federal Transit Administration's Buy America website.

Flow Down

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

Model Clause/Language

The Buy America regulation at 49 C.F.R. § 661.13 requires notification of the Buy America requirements in a recipients' bid or request for proposal for FTA funded contracts. Recipients can draw on the following language for inclusion in their federally funded procurements. Note that recipients are responsible for including the correct Buy America certification based on what they are acquiring. Recipients should not include both the rolling stock and steel, iron, or manufactured products certificates in the documents unless acquiring both in the same procurement.

Buy America

The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 C.F.R. part 661, which provide that Federal funds may not be obligated unless all steel, iron, and manufactured products used in FTA funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 C.F.R. § 661.7. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. § 661.11.

The [bidder or offeror] must submit to [Recipient] the appropriate Buy America certification below with its [bid or offer]. Bids or offers that are not accompanied by a completed Buy America certification will be rejected as nonresponsive.

In accordance with 49 C.F.R. § 661.6, for the procurement of steel, iron or manufactured products, use the certifications below.

Certificate of Compliance with Buy America Requirements

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(1), and the applicable regulations in 49 C.F.R. part 661.

Date: _____

Signature: _____

Company: _____

Name: _____

Title: _____

Certificate of Non-Compliance with Buy America Requirements

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j), but it may qualify for an exception to the requirement pursuant to 49 U.S.C. 5323(j)(2), as amended, and the applicable regulations in 49 C.F.R. § 661.7.

Date: _____

Signature: _____

Company: _____

Name: _____

Title: _____

In accordance with 49 C.F.R. § 661.12, for the procurement of rolling stock (including train control, communication, and traction power equipment) use the following certifications:

Certificate of Compliance with Buy America Rolling Stock Requirements

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C.

5323(j), and the applicable regulations of 49 C.F.R. § 661.11.

Date: _____

Signature: _____

Company: _____

Name: _____

Title: _____

Certificate of Non-Compliance with Buy America Rolling Stock Requirements

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j), but may qualify for an exception to the requirement consistent with 49 U.S.C. 5323(j)(2)(C), and the applicable regulations in 49 C.F.R. § 661.7.

Date: _____

Signature: _____

Company: _____

Name: _____

Title: _____

A.5 CARGO PREFERENCE REQUIREMENTS

46 U.S.C. § 55305

46 C.F.R. part 381

Applicability to Contracts

The Cargo Preference Act of 1954 requirements applies to all contracts involving equipment, materials, or commodities that may be transported by ocean vessels.

Flow Down

The Cargo Preference requirements apply to all contracts involved with the transport of equipment, material, or commodities by ocean vessel.

Model Clause/Language

The Maritime Administration (MARAD) regulations at 46 C.F.R. § 381.7 contain suggested contract clauses. Recipients can draw on the following language for inclusion in their federally funded procurements.

Cargo Preference - Use of United States-Flag Vessels

The contractor agrees:

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

A.6 CHARTER SERVICE

49 U.S.C. 5323(d) and (r)

49 C.F.R. part 604

Applicability to Contracts

The Charter Bus requirements apply to contracts for operating public transportation service.

Flow Down Requirements

The Charter Bus requirements flow down from FTA recipients and sub-recipients to first tier service contractors.

Model Clause/Language

The relevant statutes and regulations do not mandate any specific clause or language.

Recipients can draw on the following language for inclusion in their federally funded procurements.

Charter Service

The contractor agrees to comply with 49 U.S.C. 5323(d), 5323(r), and 49 C.F.R. part 604, which provides that recipients and sub-recipients of FTA assistance are prohibited from providing charter service using federally funded equipment or facilities if there is at least one private charter operator willing and able to provide the service, except as permitted under:

1. Federal transit laws, specifically 49 U.S.C. § 5323(d);
2. FTA regulations, "Charter Service," 49 C.F.R. part 604;
3. Any other federal Charter Service regulations; or
4. Federal guidance, except as FTA determines otherwise in writing.

The contractor agrees that if it engages in a pattern of violations of FTA's Charter Service regulations, FTA may require corrective measures or impose remedies on it.

These corrective measures and remedies may include:

1. Barring it or any subcontractor operating public transportation under its Award that has provided prohibited charter service from receiving federal assistance from FTA;
2. Withholding an amount of federal assistance as provided by Appendix D to part 604 of FTA's Charter Service regulations; or
3. Any other appropriate remedy that may apply.

The contractor should also include the substance of this clause in each subcontract that may involve operating public transit services.

A.7 CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

42 U.S.C. §§ 7401 – 7671q
33 U.S.C. §§ 1251-1387
2 C.F.R. part 200, Appendix II (G)

Applicability to Contracts

The Clean Air and Clean Water Act requirements apply to each contract and subcontract exceeding \$150,000. Each contract and subcontract must contain a provision that requires the recipient to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401–7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251– 1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

Flow Down

The Clean Air Act and Federal Water Pollution Control Act requirements extend to all third party contractors and their contracts at every tier and sub-recipients and their subcontracts at every tier.

Model Clause/Language

Recipients can draw on the following language for inclusion in their federally funded procurements.

The Contractor agrees:

1. It will not use any violating facilities;
2. It will report the use of facilities placed on or likely to be placed on the U.S. EPA “List of Violating Facilities;”
3. It will report violations of use of prohibited facilities to FTA; and
4. It will comply with the inspection and other requirements of the Clean Air Act, as amended, (42 U.S.C. §§ 7401 – 7671q); and the Federal Water Pollution Control Act as amended, (33 U.S.C. §§ 1251-1387).

A.8 CIVIL RIGHTS LAWS AND REGULATIONS

Applicability to Contracts

The following Federal Civil Rights laws and regulations apply to all contracts.

1. Federal Equal Employment Opportunity (EEO) Requirements. These include, but are not limited to:
 - a. Nondiscrimination in Federal Public Transportation Programs. 49 U.S.C. § 5332, covering projects, programs, and activities financed under 49 U.S.C. Chapter 53, prohibits discrimination on the basis of race, color, religion, national origin, sex (including sexual orientation and gender identity), disability, or age, and prohibits discrimination in employment or business opportunity.
 - b. Prohibition against Employment Discrimination. Title VII of the Civil Rights Act of 1964, as amended, 42 U.S.C. § 2000e, and Executive Order No. 11246, “Equal Employment Opportunity,” September 24, 1965, as amended, prohibit discrimination in employment on the basis of race, color, religion, sex, or national origin.
2. Nondiscrimination on the Basis of Sex. Title IX of the Education Amendments of 1972, as amended, 20 U.S.C. § 1681 et seq. and implementing Federal regulations, “Nondiscrimination on the Basis of Sex in Education Programs or Activities Receiving Federal Financial Assistance,” 49 C.F.R. part 25 prohibit discrimination on the basis of sex.
3. Nondiscrimination on the Basis of Age. The “Age Discrimination Act of 1975,” as amended, 42 U.S.C. § 6101 et seq., and Department of Health and Human Services implementing regulations, “Nondiscrimination on the Basis of Age in Programs or Activities Receiving Federal Financial Assistance,” 45 C.F.R. part 90, prohibit discrimination by participants in federally assisted programs against individuals on the basis of age. The Age Discrimination in Employment Act (ADEA), 29 U.S.C. § 621 et seq., and Equal Employment Opportunity Commission (EEOC) Implementing regulations, “Age Discrimination in Employment Act,” 29 C.F.R. part 1625, also prohibit employment discrimination against individuals age 40 and over on the basis of age.
4. Federal Protections for Individuals with Disabilities. The Americans with Disabilities Act of 1990, as amended (ADA), 42 U.S.C. § 12101 et seq., prohibits discrimination against qualified individuals with disabilities in programs, activities, and services, and imposes specific requirements on public and private entities. Third party contractors must comply with their responsibilities under Titles I, II, III, IV, and V of the ADA in employment, public services, public accommodations, telecommunications, and other provisions, many of which are subject to regulations issued by other Federal agencies.

Flow Down

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

Model Clause/Language

Every federally funded contract must include an Equal Opportunity clause. Recipients can draw on the following language for inclusion in their federally funded procurements.

Civil Rights and Equal Opportunity

The AGENCY is an Equal Opportunity Employer. As such, the AGENCY agrees to comply with all applicable Federal civil rights laws and implementing regulations. Apart from inconsistent requirements imposed by Federal laws or regulations, the AGENCY agrees to comply with the requirements of 49 U.S.C. § 5323(h) (3) by not using any Federal assistance awarded by FTA to support procurements using exclusionary or discriminatory specifications.

Under this Agreement, the Contractor shall at all times comply with the following requirements and shall include these requirements in each subcontract entered into as part thereof.

1. **Nondiscrimination.** In accordance with Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, sex, disability, or age. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.
2. **Race, Color, Religion, National Origin, Sex.** In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e et seq., and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. chapter 60, and Executive Order No. 11246, "Equal Employment Opportunity in Federal Employment," September 24, 1965, 42 U.S.C. § 2000e note, as amended by any later Executive Order that amends or supersedes it, referenced in 42 U.S.C. § 2000e note. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, national origin, or sex (including sexual orientation and gender identity). Such action shall include, but not be limited to, the following: employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
3. **Age.** In accordance with the Age Discrimination in Employment Act, 29 U.S.C. §§ 621-634, U.S. Equal Employment Opportunity Commission (U.S. EEOC) regulations, "Age Discrimination in Employment Act," 29 C.F.R. part 1625, the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6101 et seq., U.S. Health and Human Services regulations, "Nondiscrimination on the Basis of Age in Programs or Activities Receiving Federal

Financial Assistance,” 45 C.F.R. part 90, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

4. **Disabilities.** In accordance with section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, the Americans with Disabilities Act of 1990, as amended, 42U.S.C. § 12101 et seq., the Architectural Barriers Act of 1968, as amended, 42 U.S.C. § 4151 et seq., and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against individuals on the basis of disability. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

A.9 DISADVANTAGED BUSINESS ENTERPRISE (DBE)

49 C.F.R. part 26

Background and Applicability

The Disadvantaged Business Enterprise (DBE) program applies to FTA recipients receiving planning, capital and/or operating assistance that will award prime contracts (excluding transit vehicle purchases) exceeding \$250,000 in FTA funds in a Federal fiscal year. All FTA recipients above this threshold must submit a DBE program and overall triennial goal for DBE participation. The overall goal reflects the anticipated amount of DBE participation on DOT-assisted contracts. As part of its DBE program, FTA recipients must require that each transit vehicle manufacturer (TVM), as a condition of being authorized to bid or propose on FTA assisted transit vehicle procurements, certify that it has complied with the requirements of 49 C.F.R. § 26.49. Only those transit vehicle manufacturers listed on FTA's certified list of Transit Vehicle Manufacturers, or that have submitted a goal methodology to FTA that has been approved or has not been disapproved at the time of solicitation, are eligible to bid.

FTA recipients must meet the maximum feasible portion of their overall goal using race-neutral methods. Where appropriate, however, recipients are responsible for establishing DBE contract goals on individual DOT-assisted contracts. FTA recipients may use contract goals only on those DOT-assisted contracts that have subcontracting responsibilities. See 49 C.F.R. § 26.51(e). Furthermore, while FTA recipients are not required to set a contract goal on every DOT-assisted contract, they are responsible for achieving their overall program goals by administering their DBE program in good faith. FTA recipients and third party contractors can obtain information about the DBE program at the following website locations:

Federal Transit Administration website Disadvantaged Business Enterprise page click here:

<https://www.transit.dot.gov/dbe>

Department of Transportation website Disadvantaged Business Enterprise Program click here:

<https://www.transportation.gov/civil-rights/disadvantaged-business-enterprise>

Flow Down

The DBE contracting requirements flow down to all third party contractors and their contracts at every tier. It is the recipient's and prime contractor's responsibility to ensure the DBE requirements are applied across the board to all sub-recipients/contractors/subcontractors. Should a subcontractor fail to comply with the DBE regulations, FTA would look to the recipient to make sure it intervenes to monitor compliance. The onus for compliance is on the recipient.

Clause Language

For all DOT-assisted contracts, each FTA recipient must include assurances that third party contractors will comply with the DBE program requirements of 49 C.F.R. part 26, when applicable. The following contract clause is required in all DOT-assisted prime and subcontracts:

The contractor, sub-recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 C.F.R. part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to

carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- 1) Withholding monthly progress payments;
- 2) Assessing sanctions;
- 3) Liquidated damages; and/or
- 4) Disqualifying the contractor from future bidding as non-responsible. 49 C.F.R. § 26.13(b).

Further, recipients must establish a contract clause to require prime contractors to pay subcontractors for satisfactory performance of their contracts no later than 30 days from receipt of each payment the recipient makes to the prime contractor. 49 C.F.R. § 26.29(a). Finally, for contracts with defined DBE contract goals, each FTA recipient must include in each prime contract a provision stating that the contractor shall utilize the specific DBEs listed unless the contractor obtains the recipient's written consent; and that, unless the recipient's consent is provided, the contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE. 49 C.F.R. § 26.53(f) (1).

As an additional resource, recipients can draw on the following language for inclusion in their federally funded procurements.

Overview

It is the policy of the AGENCY and the United States Department of Transportation ("DOT") that Disadvantaged Business Enterprises ("DBE's"), as defined herein and in the Federal regulations published at 49 C.F.R. part 26, shall have an equal opportunity to participate in DOT-assisted contracts. It is also the policy of the AGENCY to:

1. Ensure nondiscrimination in the award and administration of DOT-assisted contracts;
2. Create a level playing field on which DBE's can compete fairly for DOT-assisted contracts;
3. Ensure that the DBE program is narrowly tailored in accordance with applicable law;
4. Ensure that only firms that fully meet 49 C.F.R. part 26 eligibility standards are permitted to participate as DBE's;
5. Help remove barriers to the participation of DBEs in DOT assisted contracts;
6. To promote the use of DBEs in all types of federally assisted contracts and procurement activities; and
7. Assist in the development of firms that can compete successfully in the marketplace outside the DBE program.

This Contract is subject to 49 C.F.R. part 26. Therefore, the Contractor must satisfy the requirements for DBE participation as set forth herein. These requirements are in addition to all other equal opportunity employment requirements of this Contract. The AGENCY shall make all determinations with regard to whether or not a Bidder/Offeree is in compliance with the requirements stated herein. In assessing compliance, the AGENCY may consider during its review of the Bidder/Offeree's submission package, the Bidder/Offeree's documented history of non-compliance with DBE requirements on previous contracts with the AGENCY.

Contract Assurance

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

DBE Participation

For the purpose of this Contract, the AGENCY will accept only DBE's who are:

1. Certified, at the time of bid opening or proposal evaluation, by the [certifying agency or the Unified Certification Program (UCP)]; or
2. An out-of-state firm who has been certified by either a local government, state government or Federal government entity authorized to certify DBE status or an agency whose DBE certification process has received FTA approval; or
3. Certified by another agency approved by the AGENCY.

DBE Participation Goal

The DBE participation goal for this Contract is set at 1.02%. This goal represents those elements of work under this Contract performed by qualified Disadvantaged Business Enterprises for amounts totaling not less than ____ % of the total Contract price. Failure to meet the stated goal at the time of proposal submission may render the Bidder/Offeree non-responsive.

Proposed Submission

Each Bidder/Offeree, as part of its submission, shall supply the following information:

1. A completed DBE Utilization Form (see below) that indicates the percentage and dollar value of the total bid/contract amount to be supplied by Disadvantaged Business Enterprises under this Contract.
2. A list of those qualified DBE's with whom the Bidder/Offeree intends to contract for the performance of portions of the work under the Contract, the agreed price to be paid to each DBE for work, the Contract items or parts to be performed by each DBE, a proposed timetable for the performance or delivery of the Contract item, and other information as required by the DBE Participation Schedule (see below). No work shall be included in the Schedule that the Bidder/Offeree has reason to believe the listed DBE will subcontract, at any tier, to other than another DBE. If awarded the Contract, the Bidder/Offeree may not deviate from the DBE Participation Schedule submitted in response to the bid. Any subsequent changes and/or substitutions of DBE firms will require review and written approval by the AGENCY.
3. An original DBE Letter of Intent (see below) from each DBE listed in the DBE Participation Schedule.
4. An original DBE Affidavit (see below) from each DBE stating that there has not been any change in its status since the date of its last certification.

Good Faith Efforts

If the Bidder/Offeree is unable to meet the goal set forth above (DBE Participation Goal), the AGENCY will consider the Bidder/Offeree's documented good

faith efforts to meet the goal in determining responsiveness. The types of actions that the AGENCY will consider as part of the Bidder/Offeror's good faith efforts include, but are not limited to, the following:

1. Documented communication with the AGENCY's DBE Coordinator (questions of IFB or RFP requirements, subcontracting opportunities, appropriate certification, will be addressed in a timely fashion);
2. Pre-bid meeting attendance. At the pre-bid meeting, the AGENCY generally informs potential Bidder/Offeror's of DBE subcontracting opportunities;
3. The Bidder/Offeror's own solicitations to obtain DBE involvement in general circulation media, trade association publication, minority-focus media and other reasonable and available means within sufficient time to allow DBEs to respond to the solicitation;
4. Written notification to DBE's encouraging participation in the proposed Contract; and
5. Efforts made to identify specific portions of the work that might be performed by DBE's.

The Bidder/Offeror shall provide the following details, at a minimum, of the specific efforts it made to negotiate in good faith with DBE's for elements of the Contract:

1. The names, addresses, and telephone numbers of DBE's that were contacted;
2. A description of the information provided to targeted DBE's regarding the specifications and bid proposals for portions of the work;
3. Efforts made to assist DBE's contacted in obtaining bonding or insurance required by the Bidder or the Authority.

Further, the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted when a non-DBE subcontractor was selected over a DBE for work on the contract. 49 C.F.R. § 26.53(b) (2) (VI). In determining whether a Bidder has made good faith efforts, the Authority may take into account the performance of other Bidders in meeting the Contract goals. For example, if the apparent successful Bidder failed to meet the goal, but meets or exceeds the average DBE participation obtained by other Bidders, the Authority may view this as evidence of the Bidder having made good faith efforts.

Administrative Reconsideration

Within five (5) business days of being informed by the AGENCY that it is not responsive or responsible because it has not documented sufficient good faith efforts, the Bidder/Offeror may request administrative reconsideration. The Bidder should make this request in writing to the AGENCY's [Contact Name]. The [Contact Name] will forward the Bidder/Offeror's request to a reconsideration official who will not have played any role in the original determination that the Bidder/Offeror did not document sufficient good faith efforts.

As part of this reconsideration, the Bidder/Offeror will have the opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so. The Bidder/Offeror will have the opportunity to meet in person with the assigned reconsideration official to discuss the issue of whether it met the goal or made adequate good faith efforts to do so. The AGENCY will send the Bidder/Offeror a written decision on its reconsideration, explaining the basis for finding that the Bidder/Offeror did or did not meet the goal or

make adequate good faith efforts to do so. The result of the reconsideration process is not administratively appealable to the Department of Transportation.

Termination of DBE Subcontractor

The Contractor shall not terminate the DBE subcontractor(s) listed in the DBE Participation Schedule (see below) without the AGENCY's prior written consent. The AGENCY may provide such written consent only if the Contractor has good cause to terminate the DBE firm. Before transmitting a request to terminate, the Contractor shall give notice in writing to the DBE subcontractor of its intent to terminate and the reason for the request. The Contractor shall give the DBE five days to respond to the notice and advise of the reasons why it objects to the proposed termination. When a DBE subcontractor is terminated or fails to complete its work on the Contract for any reason, the Contractor shall make good faith efforts to find another DBE subcontractor to substitute for the original DBE and immediately notify the AGENCY in writing of its efforts to replace the original DBE. These good faith efforts shall be directed at finding another DBE to perform at least the same amount of work under the Contract as the DBE that was terminated, to the extent needed to meet the Contract goal established for this procurement. Failure to comply with these requirements will be in accordance with Section 8 below (Sanctions for Violations).

Continued Compliance

The AGENCY shall monitor the Contractor's DBE compliance during the life of the Contract. In the event this procurement exceeds ninety (90) days, it will be the responsibility of the Contractor to submit quarterly written reports to the AGENCY that summarize the total DBE value for this Contract. These reports shall provide the following details:

- DBE utilization established for the Contract;
- Total value of expenditures with DBE firms for the quarter;
- The value of expenditures with each DBE firm for the quarter by race and gender;
- Total value of expenditures with DBE firms from inception of the Contract; and
- The value of expenditures with each DBE firm from the inception of the Contract by race and gender.

Reports and other correspondence must be submitted to the DBE Coordinator with copies provided to the [Agency Name1] and [Agency Name2]. Reports shall continue to be submitted quarterly until final payment is issued or until DBE participation is completed.

The successful Bidder/Offeror shall permit:

- The AGENCY to have access to necessary records to examine information as the AGENCY deems appropriate for the purpose of investigating and determining compliance with this provision, including, but not limited to, records of expenditures, invoices, and contract between the successful Bidder/Offeror and other DBE parties entered into during the life of the Contract.
- The authorized representative(s) of the AGENCY, the U.S. Department of Transportation, the Comptroller General of the United States, to inspect and

audit all data and record of the Contractor relating to its performance under the Disadvantaged Business Enterprise Participation provision of this Contract.

- All data/record(s) pertaining to DBE shall be maintained as stated in Section [insert reference to record keeping requirements for the Project.]

Sanctions for Violations

If at any time the AGENCY has reason to believe that the Contractor is in violation of its obligations under this Agreement or has otherwise failed to comply with terms of this Section, the AGENCY may, in addition to pursuing any other available legal remedy, commence proceedings, which may include but are not limited to, the following:

- Suspension of any payment or part due the Contractor until such time as the issues concerning the Contractor's compliance are resolved; and
- Termination or cancellation of the Contract, in whole or in part, unless the successful Contractor is able to demonstrate within a reasonable time that it is in compliance with the DBE terms stated herein.

DBE UTILIZATION FORM

The undersigned Bidder/Offeror has satisfied the requirements of the solicitation in the following manner (please check the appropriate space):

_____ The Bidder/Offer is committed to a minimum of _____ % DBE utilization on this contract.

_____ The Bidder/Offeror (if unable to meet the DBE goal of _____ %) is committed to a minimum of _____ % DBE utilization on this contract and submits documentation demonstrating good faith efforts.

DBE PARTICIPATION SCHEDULE

The Bidder/Offeror shall complete the following information for all DBE's participating in the contract that comprises the DBE Utilization percent stated in the DBE Utilization Form. The Bidder/Offeror shall also furnish the name and telephone number of the appropriate contact person should the Authority have any questions in relation to the information furnished herein.

DBE IDENTIFICATION AND INFORMATION FORM

Name and Address	Contact Name and Telephone Number	Participation Percent (Of Total Contract Value)	Description Of Work To Be Performed	Race and Gender of Firm

A.10 EMPLOYEE PROTECTIONS

49 U.S.C. § 5333(a)
40 U.S.C. §§ 3141 – 3148
29 C.F.R. part 5
18 U.S.C. § 874
29 C.F.R. part 3
40 U.S.C. §§3701-3708
29 C.F.R. part 1926

Applicability to Contracts

Certain employee protections apply to all FTA funded contracts with particular emphasis on construction related projects. The recipient will ensure that each third party contractor complies with all federal laws, regulations, and requirements, including:

1. **Prevailing Wage Requirements**
 - a. Federal transit laws, specifically 49 U.S.C. § 5333(a), (FTA’s “Davis-Bacon Related Act”);
 - b. The Davis-Bacon Act, 40 U.S.C. §§ 3141 – 3144, 3146, and 3147; and
 - c. U.S. DOL regulations, “Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction (also Labor Standards Provisions Applicable to Non-construction Contracts Subject to the Contract Work Hours and Safety Standards Act),” 29 C.F.R. part 5.
2. **“Anti-Kickback” Prohibitions**
 - a. Section 1 of the Copeland “Anti-Kickback” Act, as amended, 18 U.S.C. § 874;
 - b. Section 2 of the Copeland “Anti-Kickback” Act, as amended, 40 U.S.C. § 3145; and
 - c. U.S. DOL regulations, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in part by Loans or Grants from the United States,” 29 C.F.R. part 3.
3. **Contract Work Hours and Safety Standards**
 - a. Contract Work Hours and Safety Standards Act, as amended, 40 U.S.C. §§ 3701-3708; and supplemented by Department of Labor (DOL) regulations, 29 C.F.R. part 5; and
 - b. U.S. DOL regulations, “Safety and Health Regulations for Construction,” 29 C.F.R. part 1926.

Flow Down

These requirements extend to all third party contractors and their contracts at every tier and sub-recipients and their subcontracts at every tier. The Davis-Bacon Act and the Copeland “Anti- Kickback” Act apply to all prime construction, alteration or repair contracts in excess of \$2,000. The Contract Work Hours and Safety Standards Act apply to all FTA funded contracts in excess of \$100,000 that involve the employment of mechanics or laborers.

Model Clause/Language

The recipient must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. In addition, recipients can draw on the following language for inclusion in their federally funded procurements.

Prevailing Wage and Anti-Kickback

For all prime construction, alteration or repair contracts in excess of \$2,000 awarded by FTA, the Contractor shall comply with the Davis-Bacon Act and the Copeland “Anti-Kickback” Act. Under 49 U.S.C. § 5333(a), prevailing wage protections apply to laborers and mechanics employed on FTA assisted construction, alteration, or repair projects. The Contractor will comply with the Davis-Bacon Act, 40 U.S.C. §§ 3141-3144, and 3146-3148 as supplemented by DOL regulations at 29 C.F.R. part 5, “Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction.” In accordance with the statute, the Contractor shall pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, the Contractor agrees to pay wages not less than once a week. The Contractor shall also comply with the Copeland “Anti-Kickback” Act (40 U.S.C. § 3145), as supplemented by DOL regulations at 29 C.F.R. part 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in part by Loans or Grants from the United States.” The Contractor is prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled.

Contract Work Hours and Safety Standards

For all contracts in excess of \$100,000 that involve the employment of mechanics or laborers, the Contractor shall comply with the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 3701- 3708), as supplemented by the DOL regulations at 29 C.F.R. part 5. Under 40 U.S.C. § 3702 of the Act, the Contractor shall compute the wages of every mechanic and laborer, including watchmen and guards, on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. § 3704 are applicable to construction work and provide that no laborer or mechanic be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchase of supplies or materials or articles ordinarily available on the open market, or to contracts for transportation or transmission of intelligence.

In the event of any violation of the clause set forth herein, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, the Contractor and subcontractor shall be liable to the United States (in the case of work done

under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of this clause in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by this clause.

The FTA shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any other Federal contract with the same prime Contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in this section.

The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in this agreement.

Contract Work Hours and Safety Standards for Awards Not Involving Construction

The Contractor shall comply with all federal laws, regulations, and requirements providing wage and hour protections for non-construction employees, in accordance with 40 U.S.C. § 3702, Contract Work Hours and Safety Standards Act, and other relevant parts of that Act, 40 U.S.C. § 3701 et seq., and U.S. DOL regulations, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction (also Labor Standards Provisions Applicable to Non-construction Contracts Subject to the Contract Work Hours and Safety Standards Act)," 29 C.F.R. part 5.

The Contractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three (3) years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid.

Such records maintained under this paragraph shall be made available by the Contractor for inspection, copying, or transcription by authorized representatives of the FTA and the Department of Labor, and the Contractor will permit such representatives to interview employees during working hours on the job. The contractor shall require the inclusion of the language of this clause within subcontracts of all tiers.

A.11 ENERGY CONSERVATION

42 U.S.C. 6321 et seq.
49 C.F.R. part 622, subpart C

Applicability to Contracts

The Energy Policy and Conservation requirements are applicable to all contracts. The Recipient agrees to, and assures that its sub-recipients, if any, will comply with the mandatory energy standards and policies of its state energy conservation plans under the Energy Policy and Conservation Act, as amended, 42 U.S.C. § 6201 et seq., and perform an energy assessment for any building constructed, reconstructed, or modified with federal assistance as required under FTA regulations, “Requirements for Energy Assessments,” 49 C.F.R. part 622, subpart C.

Flow Down

These requirements extend to all third party contractors and their contracts at every tier and sub-recipients and their subcontracts at every tier.

Model Clause/Language

No specific clause is recommended in the regulations because the Energy Conservation requirements are so dependent on the state energy conservation plan. Recipients can draw on the following language for inclusion in their federally funded procurements.

Energy Conservation

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

A.12 FLY AMERICA

49 U.S.C. § 40118

41 C.F.R. part 301-10

48 C.F.R. part 47.4

Applicability to Contracts

The Fly America requirements apply to the transportation of persons or property, by air, between a place in the U.S. and a place outside the U.S., or between places outside the U.S., when the FTA will participate in the costs of such air transportation.

Transportation on a foreign air carrier is permissible when provided by a foreign air carrier under a code share agreement when the ticket identifies the U.S. air carrier's designator code and flight number. Transportation by a foreign air carrier is also permissible if there is a bilateral or multilateral air transportation agreement to which the U.S. Government and a foreign government are parties and which the U.S. DOT has determined meets the requirements of the Fly America Act.

Flow Down Requirements

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

Model Clause/Language

The relevant statutes and regulations do not require any specific clause or language that recipients use in their third party contracts. A sample clause is provided for Federal contracts at 48 C.F.R. 52.247-63. Recipients can draw on the following language for inclusion in their federally funded procurements.

FTA proposes the following language, modified from the Federal clause.

Fly America Requirements

a. *Definitions.* As used in this clause—

"International air transportation" means transportation by air between a place in the United States and a place outside the United States or between two places both of which are outside the United States.

"United States" means the 50 States, the District of Columbia, and outlying areas.

"U.S.-flag air carrier" means an air carrier holding a certificate under 49 U.S.C. Chapter 411.

b. When Federal funds are used to fund travel, Section 5 of the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. 40118) (Fly America Act) requires contractors, recipients, and others use U.S.-flag air carriers for U.S. Government-financed international air transportation of personnel (and their personal effects) or property, to the extent that service by those carriers is available. It requires the Comptroller General of the United States, in the absence of satisfactory proof of the necessity for foreign-flag air

transportation, to disallow expenditures from funds, appropriated or otherwise established for the account of the United States, for international air transportation secured aboard a foreign-flag air carrier if a U.S.-flag air carrier is available to provide such services.

- c. If available, the Contractor, in performing work under this contract, shall use U.S.-flag carriers for international air transportation of personnel (and their personal effects) or property.
- d. In the event that the Contractor selects a carrier other than a U.S.-flag air carrier for international air transportation, the Contractor shall include a statement on vouchers involving such transportation essentially as follows:

Statement of Unavailability of U.S.-Flag Air Carriers

International air transportation of persons (and their personal effects) or property by U.S.-flag air carrier was not available or it was necessary to use foreign-flag air carrier service for the following reasons. See FAR § 47.403. [State reasons]:

(End of statement)

- e. The Contractor shall include the substance of this clause, including this paragraph (e), in each subcontract or purchase under this contract that may involve international air transportation.

(End of Clause)

A.13 GOVERNMENT-WIDE DEBARMENT AND SUSPENSION

2 C.F.R. part 180

2 C.F.R. part 1200

2 C.F.R. § 200.213

2 C.F.R. part 200 Appendix II (I) Executive Order 12549

Executive Order 12689

Background and Applicability

A contract award (of any tier) in an amount expected to equal or exceed \$25,000 or a contract award at any tier for a federally required audit (irrespective of the contract amount) must not be made to parties listed on the government-wide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 C.F.R. part 180. The Excluded Parties List System in SAM contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

Recipients, contractors, and subcontractors (at any level) that enter into covered transactions are required to verify that the entity (as well as its principals and affiliates) with which they propose to contract or subcontract is not excluded or disqualified. This is done by: (a) checking the SAM exclusions; (b) collecting a certification from that person; or (c) adding a clause or condition to the contract or subcontract.

Flow Down

Recipients, contractors, and subcontractors who enter into covered transactions with a participant at the next lower level, must require that participant to: (a) comply with subpart C of 2 C.F.R. part 180, as supplemented by 2 C.F.R. part 1200; and (b) pass the requirement to comply with subpart C of 2 C.F.R. part 180 to each person with whom the participant enters into a covered transaction at the next lower tier.

Model Clause/Language

There is no required language for the Debarment and Suspension clause. Recipients can draw on the following language for inclusion in their federally funded procurements.

Debarment, Suspension, Ineligibility and Voluntary Exclusion

The Contractor shall comply and facilitate compliance with U.S. DOT regulations, “Non-procurement Suspension and Debarment,” 2 C.F.R. part 1200, which adopts and supplements the U.S. Office of Management and Budget (U.S. OMB) “Guidelines to Agencies on Government wide Debarment and Suspension (Non-procurement),” 2 C.F.R. part 180. These provisions apply to each contract at any tier of \$25,000 or more, and to each contract at any tier for a federally required audit (irrespective of the contract amount), and to each contract at any tier that must be approved by an FTA official irrespective of the contract amount. As such, the Contractor shall verify that its principals, affiliates, and subcontractors are eligible to participate in this federally funded contract and are not presently declared by any Federal department or agency to be:

- a) Debarred from participation in any federally assisted Award;
- b) Suspended from participation in any federally assisted Award;
- c) Proposed for debarment from participation in any federally assisted Award;
- d) Declared ineligible to participate in any federally assisted Award;
- e) Voluntarily excluded from participation in any federally assisted Award; or
- f) Disqualified from participation in any federally assisted Award.

By signing and submitting its bid or proposal, the bidder or proposer certifies as follows:

The certification in this clause is a material representation of fact relied upon by the AGENCY. If it is later determined by the AGENCY that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to the AGENCY, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 2 C.F.R. part 180, subpart C, as supplemented by 2 C.F.R. part 1200, while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

A.14 LOBBYING RESTRICTIONS

31 U.S.C. § 1352

2 C.F.R. § 200.450

2 C.F.R. part 200 appendix II (J) 49 C.F.R. part 20

Applicability to Contracts

The lobbying requirements apply to all contracts and subcontracts of \$100,000 or more at any tier under a Federal grant. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this agreement, the payor must complete and submit the Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

Flow Down

The lobbying requirements mandate the maximum flow down pursuant to Byrd Anti-Lobbying Amendment, 31 U.S.C. § 1352(b)(5).

Model Clause/Language

49 C.F.R. part 20, Appendices A and B provide specific language for inclusion in FTA funded third party contracts as follows:

Lobbying Restrictions

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

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title

31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Authorized Official

Signature of Contractor's

Authorized Official

_____ Date

A.15 NO GOVERNMENT OBLIGATION TO THIRD PARTIES

Applicability to Contracts

The No Obligation clause applies to all third party contracts that are federally funded.

Flow Down

The No Obligation clause extends to all third party contractors and their contracts at every tier and sub-recipients and their subcontracts at every tier.

Model Clause/Language

There is no required language for the No Obligations clause. Recipients can draw on the following language for inclusion in their federally funded procurements.

No Federal Government Obligation to Third Parties.

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

A.16 PATENT RIGHTS AND RIGHTS IN DATA

2 C.F.R. part 200, Appendix II (F) 37 C.F.R. part 401

Applicability to Contracts

If the recipient or sub-recipient wishes to enter into a contract (or subcontract) with a small business firm or nonprofit organization for the performance of experimental, developmental, or research work under the FTA award, the recipient or sub-recipient must comply with the requirements of 37 C.F.R. part 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency. Except in the case of an “other agreement” in which the Federal Government has agreed to take more limited rights, the Federal Government is entitled to a non-exclusive, royalty free license to use the resulting invention, or patent the invention for Federal Government purposes. The FTA has the right to:

1. Obtain, reproduce, publish, or otherwise use the data produced under a Federal award; and
2. Authorize others to receive, reproduce, publish, or otherwise use such data for Federal purposes.

Flow Down

The Patent Rights and Rights in Data requirements flow down to all third party contractors and their contracts at every tier that meet the definition of a research-type project under 37 U.S.C. § 401.2.

Model Clause/Language

Recipients can draw on language provided in 37 C.F.R. § 401.3 for appropriate Patent Rights and Data Rights Clauses for use in their federally funded research, development, demonstration, or special studies projects. Recipients should consult legal counsel for guidance in developing an appropriate Intellectual Property Agreement. At a minimum, recipients can include the following language in their standard boilerplates.

Intellectual Property Rights

This Project is funded through a Federal award with FTA for experimental, developmental, or research work purposes. As such, certain Patent Rights and Data Rights apply to all subject data first produced in the performance of this Contract. The Contractor shall grant the AGENCY intellectual property access and licenses deemed necessary for the work performed under this Agreement and in accordance with the requirements of 37 C.F.R. part 401, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by FTA or U.S. DOT. The terms of an intellectual property agreement and software license rights will be finalized prior to execution of this Agreement and shall, at a minimum, include the following restrictions: Except for its own internal use, the Contractor may not publish or reproduce subject data in whole or in part, or in any manner or form, nor may the Contractor authorize others to do so, without the written consent of FTA, until such time as FTA may have either released or approved the release of such data to the public. This restriction on publication, however, does not apply to any contract with an academic institution. For purposes of this agreement, the term “subject data” means recorded information whether or not copyrighted, and that is delivered or specified to be delivered as required by the Contract. Examples of “subject data” include, but are not limited to

computer software, standards, specifications, engineering drawings and associated lists, process sheets, manuals, technical reports, catalog item identifications, and related information, but do not include financial reports, cost analyses, or other similar information used for performance or administration of the Contract.

1. The Federal Government reserves a royalty-free, non-exclusive and irrevocable license to reproduce, publish, or otherwise use, and to authorize others to use for "Federal Government Purposes," any subject data or copyright described below. For "Federal Government Purposes," means use only for the direct purposes of the Federal Government. Without the copyright owner's consent, the Federal Government may not extend its Federal license to any other party.
 - a. Any subject data developed under the Contract, whether or not a copyright has been obtained; and
 - b. Any rights of copyright purchased by the Contractor using Federal assistance in whole or in part by the FTA.
2. Unless FTA determines otherwise, the Contractor performing experimental, developmental, or research work required as part of this Contract agrees to permit FTA to make available to the public, either FTA's license in the copyright to any subject data developed in the course of the Contract, or a copy of the subject data first produced under the Contract for which a copyright has not been obtained. If the experimental, developmental, or research work, which is the subject of this Contract, is not completed for any reason whatsoever, all data developed under the Contract shall become subject data as defined herein and shall be delivered as the Federal Government may direct.
3. Unless prohibited by state law, upon request by the Federal Government, the Contractor agrees to indemnify, save, and hold harmless the Federal Government, its officers, agents, and employees acting within the scope of their official duties against any liability, including costs and expenses, resulting from any willful or intentional violation by the Contractor of proprietary rights, copyrights, or right of privacy, arising out of the publication, translation, reproduction, delivery, use, or disposition of any data furnished under that contract. The Contractor shall be required to indemnify the Federal Government for any such liability arising out of the wrongful act of any employee, official, or agents of the Federal Government.
4. Nothing contained in this clause on rights in data shall imply a license to the Federal Government under any patent or be construed as affecting the scope of any license or other right otherwise granted to the Federal Government under any patent.
5. Data developed by the Contractor and financed entirely without using Federal assistance provided by the Federal Government that has been incorporated into work required by the underlying Contract is exempt from the requirements herein, provided that the Contractor identifies those data in writing at the time of delivery of the Contract work.
6. The Contractor agrees to include these requirements in each subcontract for experimental, developmental, or research work financed in whole or in part with Federal assistance.

A.17 PRE-AWARD AND POST-DELIVERY AUDITS OF ROLLING STOCK PURCHASES

49 U.S.C. 5323(m)

49 C.F.R. part 663

Applicability to Contracts

Recipients purchasing revenue service rolling stock with FTA funds must comply with the pre- award and post-delivery audit requirements set forth in 49 U.S.C. 5323(m) and supplemented by 49

C.F.R. part 663. For more information about pre-award and post-delivery audit requirements, please go to FTA's Buy America page on its website:

<https://www.transit.dot.gov/buyamerica> .

Flow Down

There is no flow down requirement for Pre-Award and Post-Delivery Audits of Rolling Stock.

Model Clause/Language

Part 663 of Title 49, Code of Federal Regulations, does not contain specific language to be included in third party contracts but does contain requirements applicable to sub-recipients and third party contractors. Recipients are advised to use the model certificates and language contained in the audit handbook. Additionally, recipients can draw on the following language for inclusion in their federally funded procurements.

Pre-Award and Post-Delivery Audit Requirements

The Contractor agrees to comply with 49 U.S.C. § 5323(m) and FTA's implementing regulation at 49 C.F.R. part 663. The Contractor shall comply with the Buy America certification(s) submitted with its proposal/bid. The Contractor agrees to participate and cooperate in any pre-award and post-delivery audits performed pursuant to 49 C.F.R. part 663 and related FTA guidance.

**A.18 PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS
AND RELATED ACTS**

49 U.S.C. § 5323(l) (1)

31 U.S.C. §§ 3801-3812

18 U.S.C. § 1001

49 C.F.R. part 31

Applicability to Contracts

The Program Fraud clause applies to all third party contracts that are federally funded.

Flow Down

The Program Fraud clause extends to all third party contractors and their contracts at every tier and sub-recipients and their subcontracts at every tier. These requirements flow down to contractors and subcontractors who make, present, or submit covered claims and statements.

Model Clause/Language

There is no required language for the Program Fraud clause. Recipients can draw on the following language for inclusion in their federally funded procurements.

Program Fraud and False or Fraudulent Statements or Related Acts

The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. chapter 53, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5323(l) on the Contractor, to the extent the Federal Government deems appropriate.

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

**A.19 PUBLIC TRANSPORTATION EMPLOYEE PROTECTIVE
ARRANGEMENTS**

49 U.S.C. § 5333(b) (“13(c)”)

29 C.F.R. part 215

Applicability to Contracts

The Public Transportation Employee Protective Arrangements apply to each contract for transit operations performed by employees of a Contractor recognized by FTA to be a transit operator.

Flow Down

The employee protective arrangements clause flows down to all third party contractors and their contracts at every tier.

Model Clause/Language

There is no required language for the Public Transportation Employee Protective Arrangements clause. Recipients can draw on the following language for inclusion in their federally funded procurements.

Public Transportation Employee Protective Arrangements

The Contractor agrees to comply with the following employee protective arrangements of 49

U.S.C. § 5333(b):

1. **U.S. DOL Certification.** Under this Contract or any Amendments thereto that involve public transportation operations that are supported with federal assistance, a certification issued by U.S. DOL is a condition of the Contract.
2. **Special Warranty.** When the Contract involves public transportation operations and is supported with federal assistance appropriated or made available for 49 U.S.C. § 5311, U.S. DOL will provide a Special Warranty for its Award, including its Award of federal assistance under the Tribal Transit Program. The U.S. DOL Special Warranty is a condition of the Contract.
3. **Special Arrangements.** The conditions of 49 U.S.C. § 5333(b) do not apply to Contractors providing public transportation operations pursuant to 49 U.S.C. § 5310. FTA reserves the right to make case-by-case determinations of the applicability of 49 U.S.C. § 5333(b) for all transfers of funding authorized under title 23, United States Code (flex funds), and make other exceptions as it deems appropriate, and, in those instances, any special arrangements required by FTA will be incorporated herein as required.

A.20 RECYCLED PRODUCTS

42 U.S.C. § 6962

40 C.F.R. part 247

2 C.F.R. part § 200.322

Applicability to Contracts

The Resource Conservation and Recovery Act, as amended, (42 U.S.C. § 6962 et seq.), requires States and local governmental authorities to provide a competitive preference to products and services that conserve natural resources, protect the environment, and are energy efficient. Recipients are required to procure only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 C.F.R. part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds

\$10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$10,000.

Flow Down

These requirements extend to all third party contractors and their contracts at every tier and sub-recipients and their subcontracts at every tier where the value of an EPA designated item exceeds \$10,000.

Model Clause/Language

There is no required language for preference for recycled products. Recipients can draw on the following language for inclusion in their federally funded procurements.

Recovered Materials

The Contractor agrees to provide a preference for those products and services that conserve natural resources, protect the environment, and are energy efficient by complying with and facilitating compliance with Section 6002 of the Resource Conservation and Recovery Act, as amended, 42 U.S.C. § 6962, and U.S. Environmental Protection Agency (U.S. EPA), “Comprehensive Procurement Guideline for Products Containing Recovered Materials,” 40 C.F.R. part 247.

A.21 SAFE OPERATION OF MOTOR VEHICLES

23 U.S.C. part 402

Executive Order No. 13043 Executive Order No. 13513

U.S. DOT Order No. 3902.10

Applicability to Contracts

The Safe Operation of Motor Vehicles requirements apply to all federally funded third party contracts. In compliance with Federal Executive Order No. 13043, “Increasing Seat Belt Use in the United States,” April 16, 1997, 23 U.S.C. Section 402 note, FTA encourages each third party contractor to adopt and promote on-the-job seat belt use policies and programs for its employees and other personnel that operate company owned, rented, or personally operated vehicles, and to include this provision in each third party subcontract involving the project. Additionally, recipients are required by FTA to include a Distracted Driving clause that addresses distracted driving, including text messaging in each of its third party agreements supported with Federal assistance.

Flow Down Requirements

The Safe Operation of Motor Vehicles requirements flow down to all third party contractors at every tier.

Model Clause/Language

There is no required language for the Safe Operation of Motor Vehicles clause. Recipients can draw on the following language for inclusion in their federally funded procurements.

Safe Operation of Motor Vehicles

Seat Belt Use

The Contractor is encouraged to adopt and promote on-the-job seat belt use policies and programs for its employees and other personnel that operate company-owned vehicles, company-rented vehicles, or personally operated vehicles. The terms “company-owned” and “company-leased” refer to vehicles owned or leased either by the Contractor or AGENCY.

Distracted Driving

The Contractor agrees to adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers, including policies to ban text messaging while using an electronic device supplied by an employer, and driving a vehicle the driver owns or rents, a vehicle Contractor owns, leases, or rents, or a privately-owned vehicle when on official business in connection with the work performed under this agreement.

A.22 SCHOOL BUS OPERATIONS

49 U.S.C. 5323(f)

49 C.F.R. part 605

Applicability to Contracts

The School Bus requirements apply to contracts for operating public transportation service.

Flow Down Requirements

The School Bus requirements flow down from FTA recipients and sub-recipients to first tier service contractors.

Model Clause/Language

The relevant statutes and regulations do not mandate any specific clause or language.

Recipients can draw on the following language for inclusion in their federally funded procurements.

School Bus Operations

The contractor agrees to comply with 49 U.S.C. 5323(f), and 49 C.F.R. part 604, and not engage in school bus operations using federally funded equipment or facilities in competition with private operators of school buses, except as permitted under:

1. Federal transit laws, specifically 49 U.S.C. § 5323(f);
2. FTA regulations, "School Bus Operations," 49 C.F.R. part 605;
3. Any other Federal School Bus regulations; or
4. Federal guidance, except as FTA determines otherwise in writing. If Contractor violates this School Bus Agreement, FTA may:
 - a. Bar the Contractor from receiving Federal assistance for public transportation;
or
 - b. Require the contractor to take such remedial measures as FTA considers appropriate.

When operating exclusive school bus service under an allowable exemption, the contractor may not use federally funded equipment, vehicles, or facilities.

The Contractor should include the substance of this clause in each subcontract or purchase under this contract that may operate public transportation services.

A.23 SEISMIC SAFETY

42 U.S.C. 7701 et seq.

49 C.F.R. part 41

Executive Order (E.O.) 12699

Applicability to Contracts

The Seismic Safety requirements apply only to contracts for the construction of new buildings or additions to existing buildings.

Flow Down

The Seismic Safety requirements flow down from FTA recipients and sub-recipients to first tier contractors to assure compliance with the applicable building standards for Seismic Safety, including the work performed by all subcontractors.

Model Clauses/Language

The regulations do not provide suggested language for third party contract clauses. Recipients can draw on the following language for inclusion in their federally funded procurements.

Seismic Safety

The contractor agrees that any new building or addition to an existing building will be designed and constructed in accordance with the standards for Seismic Safety required in Department of Transportation (DOT) Seismic Safety Regulations 49 C.F.R. part 41 and will certify to compliance to the extent required by the regulation. The contractor also agrees to ensure that all work performed under this contract, including work performed by a subcontractor, is in compliance with the standards required by the Seismic Safety regulations and the certification of compliance issued on the project.

A.24 SUBSTANCE ABUSE REQUIREMENTS

49 U.S.C. § 5331

49 C.F.R. part 655

49 C.F.R. part 40

Applicability to Contracts

Third party contractors who perform safety-sensitive functions must comply with FTA's substance abuse management program under 49 C.F.R. part 655, "Prevention of Alcohol Misuse and Prohibited Drug Use in Transit Operations." Under 49 C.F.R. § 655.4, Safety-sensitive function means any of the following duties, when performed by employees of recipients, sub-recipients, operators, or contractors:

1. Operating a revenue service vehicle, including when not in revenue service;
2. Operating a nonrevenue service vehicle, when required to be operated by a holder of a Commercial Driver's License;
3. Controlling dispatch or movement of a revenue service vehicle;
4. Maintaining (including repairs, overhaul and rebuilding) a revenue service vehicle or equipment used in revenue service. This section does not apply to the following: an employer who receives funding under 49 U.S.C. § 5307 or § 5309, is in an area less than 200,000 in population, and contracts out such services; or an employer who receives funding under 49 U.S.C. § 5311 and contracts out such services;
5. Carrying a firearm for security purposes.
6. Additionally, third party contractors providing testing services involving the performance of safety sensitive activities must also comply with 49 C.F.R. part 40, "Procedures for Transportation Workplace Drug and Alcohol Testing Programs."

Flow Down Requirements

The Substance Abuse requirements flow down to all third party contractors at every tier who perform a safety-sensitive function for the recipient or sub-recipient.

Model Clause/Language

FTA's drug and alcohol rules, 49 C.F.R. part 655, are unique among the regulations issued by FTA. First, they require recipients to ensure that any entity performing a safety-sensitive function on the recipient's behalf (usually sub-recipients and/or contractors) implement a complex drug and alcohol testing program that complies with part 655. Second, the rules condition the receipt of certain kinds of FTA funding on the recipient's compliance with the rules; thus, the recipient is not in compliance with the rules unless every entity that performs a safety-sensitive function on the recipient's behalf is in compliance with the rules. Third, the rules do not specify how a recipient ensures that its sub-recipients and/or contractors comply with them.

How a recipient does so depends on several factors, including whether the contractor is covered independently by the drug and alcohol rules of another Department of Transportation operating administration, the nature of the relationship that the recipient has with the contractor, and the financial resources available to the recipient to oversee the contractor's drug and alcohol testing program. In short, there are a variety of ways a recipient can ensure that its sub-recipients and contractors comply with the rules.

FTA has developed three model contract provisions for recipients to use "as is" or to modify to fit their particular situations.

Explanation of Model Contract Clauses

Option 1

The recipient ensures the contractor's compliance with the rules by requiring the contractor to participate in a drug and alcohol program administered by the recipient. The advantages of doing this are obvious: the recipient maintains total control over its compliance with 49 C.F.R. part 655. The disadvantage is that the recipient, which may not directly employ any safety-sensitive employees, has to implement a complex testing program. Therefore, this may be a practical option for only those recipients that have a testing program for their employees, and can add the contractor's safety-sensitive employees to that program.

Option 2

The recipient relies on the contractor to implement a drug and alcohol testing program that complies with 49 C.F.R. part 655, but retains the ability to monitor the contractor's testing program; thus, the recipient has less control over its compliance with the drug and alcohol testing rules than it does under Option 1. The advantage of this approach is that it places the responsibility for complying with the rules on the entity that is actually performing the safety-sensitive function. Moreover, it reserves to the recipient the power to ensure that the contractor complies with the program. The disadvantage of Option 2 is that, without adequate monitoring of the contractor's program, the recipient may find itself out of compliance with the rules.

Option 3

The recipient specifies some or all of the specific features of a contractor's drug and alcohol compliance program. Thus, it requires the recipient to decide what it wants to do and how it wants to do it. The advantage of this option is that the recipient has more control over the contractor's drug and alcohol testing program, yet it is not actually administering the testing program. The disadvantage is that the recipient has to specify and understand clearly what it wants to do and why.

SUBSTANCE ABUSE TESTING

Option 1

The Contractor agrees to participate in AGENCY's drug and alcohol program established in compliance with 49 C.F.R. part 655.

SUBSTANCE ABUSE TESTING

Option 2

The Contractor agrees to establish and implement a drug and alcohol testing program that complies with 49 C.F.R. parts 655, produce any documentation necessary to establish its compliance with part 655, and permit any authorized representative of the United States Department of Transportation or its operating administrations, the State Oversight Agency of [name of State], or AGENCY, to inspect the facilities and records associated with the implementation of the drug and alcohol testing program as required under 49 C.F.R. part 655 and review the testing process. The Contractor agrees further to certify annually its compliance with

parts 655 before [insert date] and to submit the Management Information System (MIS) reports before [insert date before March 15] to [insert title and address of person responsible for receiving information]. To certify compliance, the Contractor shall use the "Substance Abuse Certifications" in the "Annual List of Certifications and Assurances for Federal Transit Administration Grants and Cooperative Agreements," which is published annually in the Federal Register.

SUBSTANCE ABUSE TESTING

Option 3

The Contractor agrees to establish and implement a drug and alcohol testing program that complies with 49 C.F.R. part 655, produce any documentation necessary to establish its compliance with part 655, and permit any authorized representative of the United States Department of Transportation or its operating administrations, the State Oversight Agency of [name of State], or AGENCY, to inspect the facilities and records associated with the implementation of the drug and alcohol testing program as required under 49 C.F.R. part 655 and review the testing process. The Contractor agrees further to certify annually its compliance with parts 655 before [insert date] and to submit the Management Information System (MIS) reports before [insert date before March 15] to [insert title and address of person responsible for receiving information]. To certify compliance the Contractor shall use the "Substance Abuse Certifications" in the "Annual List of Certifications and Assurances for Federal Transit Administration Grants and Cooperative Agreements," which is published annually in the Federal Register. The Contractor agrees further to [Select a, b, or c] (a) submit before [insert date or upon request] a copy of the Policy Statement developed to implement its drug and alcohol testing program; OR (b) adopt [insert title of the Policy Statement the recipient wishes the contractor to use] as its policy statement as required under 49 C.F.R. part 655; OR (c) submit for review and approval before [insert date or upon request] a copy of its Policy Statement developed to implement its drug and alcohol testing program. In addition, the Contractor agrees to: [to be determined by the recipient, but may address areas such as: the selection of the certified laboratory, substance abuse professional, or Medical Review Officer, or the use of a consortium].

A.25 TERMINATION

2 C.F.R. § 200.339

2 C.F.R. part 200, Appendix II (B)

Applicability to Contracts

All contracts in excess of \$10,000 must address termination for cause and for convenience, including the manner by which it will be effected and the basis for settlement.

Flow Down

For all contracts in excess of \$10,000, the Termination clause extends to all third party contractors and their contracts at every tier and sub-recipients and their subcontracts at every tier.

Model Clause/Language

There is no required language for the Terminations clause. Recipients can draw on the following language for inclusion in their federally funded procurements.

Termination for Convenience (General Provision)

The AGENCY may terminate this contract, in whole or in part, at any time by written notice to the Contractor when it is in the AGENCY's best interest. The Contractor shall be paid its costs, including contract close-out costs, and profit on work performed up to the time of termination. The Contractor shall promptly submit its termination claim to AGENCY to be paid the Contractor. If the Contractor has any property in its possession belonging to AGENCY, the Contractor will account for the same, and dispose of it in the manner AGENCY directs.

Termination for Default [Breach or Cause] (General Provision)

If the Contractor does not deliver supplies in accordance with the contract delivery schedule, or if the contract is for services, the Contractor fails to perform in the manner called for in the contract, or if the Contractor fails to comply with any other provisions of the contract, the AGENCY may terminate this contract for default. Termination shall be effected by serving a Notice of Termination on the Contractor setting forth the manner in which the Contractor is in default. The Contractor will be paid only the contract price for supplies delivered and accepted, or services performed in accordance with the manner of performance set forth in the contract.

If it is later determined by the AGENCY that the Contractor had an excusable reason for not performing, such as a strike, fire, or flood, events which are not the fault of or are beyond the control of the Contractor, the AGENCY, after setting up a new delivery of performance schedule, may allow the Contractor to continue work, or treat the termination as a Termination for Convenience.

Opportunity to Cure (General Provision)

The AGENCY, in its sole discretion may, in the case of a termination for breach or default, allow the Contractor [an appropriately short period of time] in which to cure

the defect. In such case, the Notice of Termination will state the time period in which cure is permitted and other appropriate conditions

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

Waiver of Remedies for any Breach

In the event that AGENCY elects to waive its remedies for any breach by Contractor of any covenant, term or condition of this contract, such waiver by AGENCY shall not limit AGENCY's remedies for any succeeding breach of that or of any other covenant, term, or condition of this contract.

Termination for Convenience (Professional or Transit Service Contracts)

The AGENCY, by written notice, may terminate this contract, in whole or in part, when it is in the AGENCY's interest. If this contract is terminated, the AGENCY shall be liable only for payment under the payment provisions of this contract for services rendered before the effective date of termination.

Termination for Default (Supplies and Service)

If the Contractor fails to deliver supplies or to perform the services within the time specified in this contract or any extension, or if the Contractor fails to comply with any other provisions of this contract, the AGENCY may terminate this contract for default. The AGENCY shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of the default. The Contractor will only be paid the contract price for supplies delivered and accepted, or services performed in accordance with the manner or performance set forth in this contract.

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

Termination for Default (Transportation Services)

If the Contractor fails to pick up the commodities or to perform the services, including delivery services, within the time specified in this contract or any extension, or if the Contractor fails to comply with any other provisions of this contract, the AGENCY may terminate this contract for default. The AGENCY shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of default. The Contractor will only be paid the contract price for services performed in accordance with the manner of performance set forth in this contract.

If this contract is terminated while the Contractor has possession of AGENCY goods, the Contractor shall, upon direction of the AGENCY, protect and preserve the goods until surrendered to the AGENCY or its agent. The Contractor and AGENCY shall

agree on payment for the preservation and protection of goods. Failure to agree on an amount will be resolved under the Dispute clause.

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

Termination for Default (Construction)

If the Contractor refuses or fails to prosecute the work or any separable part, with the diligence that will ensure its completion within the time specified in this contract or any extension or fails to complete the work within this time, or if the Contractor fails to comply with any other provision of this contract, AGENCY may terminate this contract for default. The AGENCY shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of the default. In this event, the AGENCY may take over the work and complete it by contract or otherwise, and may take possession of and use any materials, appliances, and plant on the work site necessary for completing the work. The Contractor and its sureties shall be liable for any damage to the AGENCY resulting from the Contractor's refusal or failure to complete the work within specified time, whether or not the Contractor's right to proceed with the work is terminated. This liability includes any increased costs incurred by the AGENCY in completing the work.

The Contractor's right to proceed shall not be terminated nor shall the Contractor be charged with damages under this clause if:

1. The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include: acts of God, acts of AGENCY, acts of another contractor in the performance of a contract with AGENCY, epidemics, quarantine restrictions, strikes, freight embargoes; and
2. The Contractor, within [10] days from the beginning of any delay, notifies AGENCY in writing of the causes of delay. If, in the judgment of AGENCY, the delay is excusable, the time for completing the work shall be extended. The judgment of AGENCY shall be final and conclusive for the parties, but subject to appeal under the Disputes clause(s) of this contract.

If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination had been issued for the convenience of AGENCY.

Termination for Convenience or Default (Architect and Engineering)

The AGENCY may terminate this contract in whole or in part, for the AGENCY's convenience or because of the failure of the Contractor to fulfill the contract obligations. The AGENCY shall terminate by delivering to the Contractor a Notice of Termination specifying the nature, extent, and effective date of the termination. Upon receipt of the notice, the Contractor shall (1) immediately discontinue all services affected (unless the notice directs otherwise), and (2) deliver to the AGENCY's Contracting Officer all data, drawings, specifications, reports, estimates, summaries, and other information and materials accumulated in performing this contract, whether completed or in process. AGENCY has a royalty-free, nonexclusive, and irrevocable

license to reproduce, publish or otherwise use, all such data, drawings, specifications, reports, estimates, summaries, and other information and materials.

If the termination is for the convenience of the AGENCY, the AGENCY's Contracting Officer shall make an equitable adjustment in the contract price but shall allow no anticipated profit on unperformed services.

If the termination is for failure of the Contractor to fulfill the contract obligations, the AGENCY may complete the work by contract or otherwise and the Contractor shall be liable for any additional cost incurred by the AGENCY.

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

Termination for Convenience or Default (Cost-Type Contracts)

The AGENCY may terminate this contract, or any portion of it, by serving a Notice of Termination on the Contractor. The notice shall state whether the termination is for convenience of AGENCY or for the default of the Contractor. If the termination is for default, the notice shall state the manner in which the Contractor has failed to perform the requirements of the contract. The Contractor shall account for any property in its possession paid for from funds received from the AGENCY, or property supplied to the Contractor by the AGENCY. If the termination is for default, the AGENCY may fix the fee, if the contract provides for a fee, to be paid the Contractor in proportion to the value, if any, of work performed up to the time of termination. The Contractor shall promptly submit its termination claim to the AGENCY and the parties shall negotiate the termination settlement to be paid the Contractor.

If the termination is for the convenience of AGENCY, the Contractor shall be paid its contract close-out costs, and a fee, if the contract provided for payment of a fee, in proportion to the work performed up to the time of termination.

If, after serving a Notice of Termination for Default, the AGENCY determines that the Contractor has an excusable reason for not performing, the AGENCY, after setting up a new work schedule, may allow the Contractor to continue work, or treat the termination as a Termination for Convenience.

A.26 VIOLATION AND BREACH OF CONTRACT

2 C.F.R. § 200.326

2 C.F.R. part 200, Appendix II (A)

Applicability to Contracts

All contracts in excess of the Simplified Acquisition Threshold (currently set at \$150,000) shall contain administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

Flow Down

The Violations and Breach of Contracts clause flow down to all third party contractors and their contracts at every tier.

Model Clauses/Language

FTA does not prescribe the form or content of such provisions. The provisions developed will depend on the circumstances and the type of contract. Recipients should consult legal counsel in developing appropriate clauses. The following clauses are examples of provisions from various FTA third party contracts. Recipients can draw on these examples for inclusion in their federally funded procurements.

Rights and Remedies of the AGENCY

The AGENCY shall have the following rights in the event that the AGENCY deems the Contractor guilty of a breach of any term under the Contract.

1. The right to take over and complete the work or any part thereof as agency for and at the expense of the Contractor, either directly or through other contractors;
2. The right to cancel this Contract as to any or all of the work yet to be performed;
3. The right to specific performance, an injunction or any other appropriate equitable remedy; and
4. The right to money damages.

For purposes of this Contract, breach shall include [AGENCY to define].

Rights and Remedies of Contractor

Inasmuch as the Contractor can be adequately compensated by money damages for any breach of this Contract, which may be committed by the AGENCY, the Contractor expressly agrees that no default, act or omission of the AGENCY shall constitute a material breach of this Contract, entitling Contractor to cancel or rescind the Contract (unless the AGENCY directs Contractor to do so) or to suspend or abandon performance.

Remedies

Substantial failure of the Contractor to complete the Project in accordance with the terms of this Agreement will be a default of this Agreement. In the event of a default, the AGENCY will have all remedies in law and equity, including the right to specific performance, without further assistance, and the rights to termination or suspension as provided herein. The Contractor recognizes that in the event of a breach of this

Agreement by the Contractor before the AGENCY takes action contemplated herein, the AGENCY will provide the Contractor with sixty (60) days written notice that the AGENCY considers that such a breach has occurred and will provide the Contractor a reasonable period of time to respond and to take necessary corrective action.

Disputes

- **Example 1:** Disputes arising in the performance of this Contract that are not resolved by agreement of the parties shall be decided in writing by the authorized representative of AGENCY's [title of employee]. This decision shall be final and conclusive unless within [10] days from the date of receipt of its copy, the Contractor mails or otherwise furnishes a written appeal to the [title of employee]. In connection with any such appeal, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of the [title of employee] shall be binding upon the Contractor and the Contractor shall abide by the decision.
- **Example 2:** The AGENCY and the Contractor intend to resolve all disputes under this Agreement to the best of their abilities in an informal manner. To accomplish this end, the parties will use an Alternative Dispute Resolution process to resolve disputes in a manner designed to avoid litigation. In general, the parties contemplate that the Alternative Dispute Resolution process will include, at a minimum, an attempt to resolve disputes through communications between their staffs, and, if resolution is not reached at that level, a procedure for review and action on such disputes by appropriate management level officials within the AGENCY and the Contractor's organization.

In the event that a resolution of the dispute is not mutually agreed upon, the parties can agree to mediate the dispute or proceed with litigation. Notwithstanding any provision of this section, or any other provision of this Contract, it is expressly agreed and understood that any court proceeding arising out of a dispute under the Contract shall be heard by a Court de novo and the court shall not be limited in such proceeding to the issue of whether the Authority acted in an arbitrary, capricious or grossly erroneous manner.

Pending final settlement of any dispute, the parties shall proceed diligently with the performance of the Contract, and in accordance with the AGENCY's direction or decisions made thereof.

Performance during Dispute

Unless otherwise directed by AGENCY, Contractor shall continue performance under this Contract while matters in dispute are being resolved.

Claims for Damages

Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the party or of any of its employees, agents or others

for whose acts it is legally liable, a claim for damages therefor shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.

Remedies

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

Rights and Remedies

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

This content is from the eCFR and is authoritative but unofficial.

Title 49 —Transportation

Subtitle B —Other Regulations Relating to Transportation

Chapter VI —Federal Transit Administration, Department of Transportation

Part 661 Buy America Requirements

- § 661.1 Applicability.
- § 661.3 Definitions.
- § 661.5 General requirements.
- § 661.6 Certification requirements for procurement of steel or manufactured products.
- § 661.7 Waivers.
- § 661.9 Application for waivers.
- § 661.11 Rolling stock procurements.
- § 661.12 Certification requirement for procurement of buses, other rolling stock and associated equipment.
- § 661.13 Grantee responsibility.
- § 661.15 Investigation procedures.
- § 661.17 Failure to comply with certification.
- § 661.18 Intentional violations.
- § 661.19 Sanctions.
- § 661.20 Rights of parties.
- § 661.21 State Buy America provisions.

PART 661—BUY AMERICA REQUIREMENTS

Authority: 49 U.S.C. 5323(j) (formerly sec. 165 of the Surface Transportation Assistance Act of 1982 (Pub. L. 97-424); as amended by sec. 337, Pub. L. 100-17; sec. 1048, Pub. L. 102-240; sec. 3020(b), Pub. L. 105-178; and sec. 3023(i) and (k), Pub. L. 109-59); 49 CFR 1.51.

Source: 56 FR 932, Jan. 9, 1991, unless otherwise noted.

§ 661.1 Applicability.

Unless otherwise noted, this part applies to all federally assisted procurements using funds authorized by 49 U.S.C. 5323(j); 23 U.S.C. 103(e)(4); and section 14 of the National Capital Transportation Act of 1969, as amended.

[56 FR 932, Jan. 9, 1991, as amended at 72 FR 53696, Sept. 20, 2007]

§ 661.3 Definitions.

As used in this part:

Act means the Federal Public Transportation Law (49 U.S.C. Chapter 53).

Administrator means the Administrator of FTA, or designee.

Component means any article, material, or supply, whether manufactured or unmanufactured, that is directly incorporated into the end product at the final assembly location.

Contractor means a party to a third party contract other than the grantee.

End product means any vehicle, structure, product, article, material, supply, or system, which directly incorporates constituent components at the final assembly location, that is acquired for public use under a federally-funded third-party contract, and which is ready to provide its intended end function or use without any further manufacturing or assembly change(s). A list of representative end products is included at Appendix A to this section.

FTA means the Federal Transit Administration.

Grantee means any entity that is a recipient of FTA funds.

Manufactured product means an item produced as a result of the manufacturing process.

Manufacturing process means the application of processes to alter the form or function of materials or of elements of the product in a manner adding value and transforming those materials or elements so that they represent a new end product functionally different from that which would result from mere assembly of the elements or materials.

Negotiated procurement means a contract awarded using other than sealed bidding procedures.

Rolling stock means transit vehicles such as buses, vans, cars, railcars, locomotives, trolley cars and buses, and ferry boats, as well as vehicles used for support services.

System means a machine, product, or device, or a combination of such equipment, consisting of individual components, whether separate or interconnected by piping, transmission devices, electrical cables or circuitry, or by other devices, which are intended to contribute together to a clearly defined function. Factors to consider in determining whether a system constitutes an end product include: Whether performance warranties apply to an integrated system (regardless of whether components are separately warranted); whether products perform on an integrated basis with other products in a system, or are operated independently of associated products in the system; or whether transit agencies routinely procure a product separately (other than as replacement or spare parts).

United States means the several States, the Commonwealth of Puerto Rico, the District of Columbia, Guam, American Samoa, the U.S. Virgin Islands, and the Commonwealth of the Northern Mariana Islands.

Appendix A to § 661.3—End Products

The following is a list of representative end products that are subject to the requirements of Buy America. This list is representative, not exhaustive.

- (1) *Rolling stock end products*: All individual items identified as rolling stock in § 661.3 (e.g., buses, vans, cars, railcars, locomotives, trolley cars and buses, ferry boats, as well as vehicles used for support services); train control, communication, and traction power equipment that meets the definition of end product at § 661.3 (e.g., a communication or traction power system, including manufactured bimetallic power rail).
- (2) *Steel and iron end products*: Items made primarily of steel or iron such as structures, bridges, and track work, including running rail, contact rail, and turnouts.
- (3) *Manufactured end products*: Infrastructure projects not made primarily of steel or iron, including structures (terminals, depots, garages, and bus shelters), ties and ballast; contact rail not made primarily of steel or iron; fare collection systems; computers; information systems; security systems; data processing systems; and mobile lifts, hoists, and elevators.

[72 FR 53696, Sept. 20, 2007, as amended at 74 FR 30239, June 25, 2009]

§ 661.5 General requirements.

- (a) Except as provided in § 661.7 and § 661.11 of this part, no funds may be obligated by FTA for a grantee project unless all iron, steel, and manufactured products used in the project are produced in the United States.
- (b) All steel and iron manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.
- (c) The steel and iron requirements apply to all construction materials made primarily of steel or iron and used in infrastructure projects such as transit or maintenance facilities, rail lines, and bridges. These items include, but are not limited to, structural steel or iron, steel or iron beams and columns, running rail and contact rail. These requirements do not apply to steel or iron used as components or subcomponents of other manufactured products or rolling stock, or to bimetallic power rail incorporating steel or iron components.
- (d) For a manufactured product to be considered produced in the United States:
- (1) All of the manufacturing processes for the product must take place in the United States; and
 - (2) All of the components of the product must be of U.S. origin. A component is considered of U.S. origin if it is manufactured in the United States, regardless of the origin of its subcomponents.

[61 FR 6302, Feb. 16, 1996, as amended at 74 FR 30239, June 25, 2009]

§ 661.6 Certification requirements for procurement of steel or manufactured products.

If steel, iron, or manufactured products (as defined in §§ 661.3 and 661.5 of this part) are being procured, the appropriate certificate as set forth below shall be completed and submitted by each bidder or offeror in accordance with the requirement contained in § 661.13(b) of this part.

Certificate of Compliance with Buy America Requirements

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(1), and the applicable regulations in 49 CFR part 661.

Date _____
Signature _____
Company _____
Name _____
Title _____

Certificate of Non-Compliance with Buy America Requirements

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j), but it may qualify for an exception to the requirement pursuant to 49 U.S.C. 5323(j)(2), as amended, and the applicable regulations in 49 CFR 661.7.

Date _____
Signature _____
Company _____
Name _____
Title _____

[71 FR 14117, Mar. 21, 2006, as amended at 72 FR 53696, Sept. 20, 2007]

§ 661.7 Waivers.

- (a) Section 5323(j)(2) of Title 49 United States Code provides that the general requirements of 49 U.S.C. 5323(j)(1) shall not apply in four specific instances. This section sets out the conditions for the three statutory waivers based on public interest, non-availability, and price-differential. Section 661.11 of this part sets out the conditions for the fourth statutory waiver governing the procurement of rolling stock and associated equipment.
- (b) Under the provision of 49 U.S.C. 5323(j)(2)(A), the Administrator may waive the general requirements of 49 U.S.C. 5323(j)(1) if the Administrator finds that their application would be inconsistent with the public interest. In determining whether the conditions exist to grant this public interest waiver, the Administrator will consider all appropriate factors on a case-by-case basis, unless a general exception is specifically set out in this part. When granting a public interest waiver, the Administrator shall issue a detailed written statement justifying why the waiver is in the public interest. The Administrator shall publish this justification in the FEDERAL REGISTER, providing the public with a reasonable time for notice and comment of not more than seven calendar days.

- (c) Under the provision of 49 U.S.C. 5323(j)(2), the Administrator may waive the general requirements of 49 U.S.C. 5323(j) if the Administrator finds that the materials for which a waiver is requested are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
 - (1) It will be presumed that the conditions exist to grant this non-availability waiver if no responsive and responsible bid is received offering an item produced in the United States.
 - (2) In the case of a sole source procurement, the Administrator will grant this non-availability waiver only if the grantee provides sufficient information which indicates that the item to be procured is only available from a single source or that the item to be procured is not produced in sufficient and reasonably available quantities of a satisfactory quality in the United States.
 - (3) After contract award, the Administrator may grant a non-availability waiver under this paragraph, in any case in which a bidder or offeror originally certified compliance with the Buy America requirements in good faith, but can no longer comply with its certification. The Administrator will grant a non-availability waiver only if the grantee provides sufficient evidence that the original certification was made in good faith and that the item to be procured cannot now be obtained domestically due to commercial impossibility or impracticability. In determining whether the conditions exist to grant a post-award non-availability waiver, the Administrator will consider all appropriate factors on a case-by-case basis.
- (d) Under the provision of section 165(b)(4) of the Act, the Administrator may waive the general requirements of section 165(a) if the Administrator finds that the inclusion of a domestic item or domestic material will increase the cost of the contract between the grantee and its supplier of that item or material by more than 25 percent. The Administrator will grant this price-differential waiver if the amount of the lowest responsive and responsible bid offering the item or material that is not produced in the United States multiplied by 1.25 is less than the amount of the lowest responsive and responsible bid offering the item or material produced in the United States.
- (e) The four statutory waivers of 49 U.S.C. 5323(j)(2) as set out in this part shall be treated as being separate and distinct from each other.
- (f) The waivers described in paragraphs (b) and (c) of this section may be granted for a component or subcomponent in the case of the procurement of the items governed by 49 U.S.C. 5323(j)(2)(C) (requirements for rolling stock). If a waiver is granted for a component or a subcomponent, that component or subcomponent will be considered to be of domestic origin for the purposes of § 661.11 of this part.
- (g) The waivers described in paragraphs (b) and (c) of this section may be granted for a specific item or material that is used in the production of a manufactured product that is governed by the requirements of § 661.5(d) of this part. If such a waiver is granted to such a specific item or material, that item or material will be treated as being of domestic origin.
- (h) The provisions of this section shall not apply to products produced in a foreign country if the Secretary, in consultation with the United States Trade Representative, determines that:
 - (1) That foreign country is party to an agreement with the United States pursuant to which the head of an agency of the United States has waived the requirements of this section; and
 - (2) That foreign country has violated the terms of the agreement by discriminating against products covered by this section that are produced in the United States and are covered by the agreement.

Appendix A to § 661.7—General Waivers

- (a) All waivers published in 48 CFR 25.104 which establish excepted articles, materials, and supplies for the Buy American Act of 1933 (41 U.S.C. 10a-d), as the waivers may be amended from time to time, apply to this part under the provisions of § 661.7 (b) and (c).
- (b) Under the provisions of § 661.7 (b) and (c) of this part, a general public interest waiver from the Buy America requirements applies to microprocessors, computers, microcomputers, or software, or other such devices, which are used solely for the purpose of processing or storing data. This general waiver does not extend to a product or device which merely contains a microprocessor or microcomputer and is not used solely for the purpose of processing or storing data.
- (c) Under the provisions of § 661.7(b) of this part, a general public interest waiver from the Buy America requirements for “small purchases” (as defined in the “common grant rule,” at 49 CFR 18.36(d)) made by FTA grantees with capital, planning, or operating assistance.

[56 FR 932, Jan. 9, 1991, as amended at 60 FR 37928, July 24, 1995, 61 FR 6302, Feb. 16, 1996; 71 FR 14117, Mar. 21, 2006; 72 FR 53697, Sept. 20, 2007; 74 FR 30239, June 25, 2009]

§ 661.9 Application for waivers.

- (a) This section sets out the application procedures for obtaining all waivers, except those general exceptions set forth in this part for which individual applications are unnecessary and those covered by 49 U.S.C. 5323(j)(2)(C). The procedures for obtaining an exception covered by 49 U.S.C. 5323(j)(2)(C) are set forth in § 661.11 of this part.
- (b) A bidder or offeror who seeks to establish grounds for an exception must seek the exception, in a timely manner, through the grantee.
- (c) Except as provided in paragraph (d) of this section, only a grantee may request a waiver. The request must be in writing, include facts and justification to support the waiver, and be submitted to the Administrator through the appropriate Regional Office.
- (d) FTA will consider a request for a waiver from a potential bidder, offeror, or supplier only if the waiver is being sought under § 661.7 (f) or (g) of this part.
- (e) The Administrator will issue a written determination setting forth the reasons for granting or denying the exception request. Each request for an exception, and FTA's action on the request, are available for public inspection under the provisions of 49 CFR part 601, subpart C.

[56 FR 932, Jan. 9, 1991, as amended at 71 FR 14117, Mar. 21, 2006; 72 FR 53697, Sept. 20, 2007]

§ 661.11 Rolling stock procurements.

- (a) The provisions of § 661.5 do not apply to the procurement of buses and other rolling stock (including train control, communication, and traction power equipment), if the cost of components produced in the United States is more than 60 percent of the cost of all components and final assembly takes place in the United States.
- (b) The domestic content requirements in paragraph (a) of this section also apply to the domestic content requirements for components set forth in paragraphs (i), (j), and (l) of this section.

- (c) A component is any article, material, or supply, whether manufactured or unmanufactured, that is directly incorporated into an end product at the final assembly location.
- (d) A component may be manufactured at the final assembly location if the manufacturing process to produce the component is an activity separate and distinct from the final assembly of the end product.
- (e) A component is considered to be manufactured if there are sufficient activities taking place to advance the value or improve the condition of the subcomponents of that component; that is, if the subcomponents have been substantially transformed or merged into a new and functionally different article.
- (f) Except as provided in paragraph (k) of this section, a subcomponent is any article, material, or supply, whether manufactured or unmanufactured, that is one step removed from a component (as defined in paragraph (c) of this section) in the manufacturing process and that is incorporated directly into a component.
- (g) For a component to be of domestic origin, more than 60 percent of the subcomponents of that component, by cost, must be of domestic origin, and the manufacture of the component must take place in the United States. If, under the terms of this part, a component is determined to be of domestic origin, its entire cost may be used in calculating the cost of domestic content of an end product.
- (h) A subcomponent is of domestic origin if it is manufactured in the United States.
- (i) If a subcomponent manufactured in the United States is exported for inclusion in a component that is manufactured outside the United States and it receives tariff exemptions under the procedures set forth in 19 CFR 10.11 through 10.24, the subcomponent retains its domestic identity and can be included in the calculation of the domestic content of an end product even if such a subcomponent represents less than 60 percent of the cost of a particular component.
- (j) If a subcomponent manufactured in the United States is exported for inclusion in a component manufactured outside the United States and it does not receive tariff exemption under the procedures set forth in 19 CFR 10.11 through 10.24, the subcomponent loses its domestic identity and cannot be included in the calculation of the domestic content of an end product.
- (k) Raw materials produced in the United States and then exported for incorporation into a component are not considered to be a subcomponent for the purpose of calculating domestic content. The value of such raw materials is to be included in the cost of the foreign component.
- (l) If a component is manufactured in the United States, but contains less than 60 percent domestic subcomponents, by cost, the cost of the domestic subcomponents and the cost of manufacturing the component may be included in the calculation of the domestic content of the end product.
- (m) For purposes of this section, except as provided in paragraph (o) of this section:
 - (1) The cost of a component or a subcomponent is the price that a bidder or offeror must pay to a subcontractor or supplier for that component or subcomponent. Transportation costs to the final assembly location must be included in calculating the cost of foreign components and subcomponents.
 - (2) If a component or subcomponent is manufactured by the bidder or offeror, the cost of the component is the cost of labor and materials incorporated into the component or subcomponent, an allowance for profit, and the administrative and overhead costs attributable to that component or subcomponent under normal accounting principles.

- (n) The cost of a component of foreign origin is set using the foreign exchange rate at the time the bidder or offeror executes the appropriate Buy America certificate.
- (o) The cost of a subcomponent that retains its domestic identity consistent with paragraph (j) of this section shall be the cost of the subcomponent when last purchased, f.o.b. United States port of exportation or point of border crossing as set out in the invoice and entry papers or, if no purchase was made, the value of the subcomponent at the time of its shipment for exportation, f.o.b. United States port of exportation or point of border crossing as set out in the invoice and entry papers.
- (p) In accordance with 49 U.S.C. 5323(j), labor costs involved in final assembly shall not be included in calculating component costs.
- (q) The actual cost, not the bid price, of a component is to be considered in calculating domestic content.
- (r) Final assembly is the creation of the end product from individual elements brought together for that purpose through application of manufacturing processes. If a system is being procured as the end product by the grantee, the installation of the system qualifies as final assembly.
- (s) [Reserved]
- (t) Train control equipment includes, but is not limited to, the following equipment:
 - (1) Mimic board in central control
 - (2) Dispatcher's console
 - (3) Local control panels
 - (4) Station (way side) block control relay cabinets
 - (5) Terminal dispatcher machines
 - (6) Cable/cable trays
 - (7) Switch machines
 - (8) Way side signals
 - (9) Impedance bonds
 - (10) Relay rack bungalows
 - (11) Central computer control
 - (12) Brake equipment
 - (13) Brake systems
 - (14) Cab Signaling;
 - (15) ATO Equipment;
 - (16) ATP Equipment;
 - (17) Wayside Transponders;
 - (18) Trip Stop Equipment;
 - (19) Wayside Magnets;

- (20) Speed Measuring Devices;
- (21) Car Axle Counters;
- (22) Communication Based Train Control (CBTC).
- (u) Communication equipment includes, but is not limited to, the following equipment:
 - (1) Radios
 - (2) Space station transmitter and receivers
 - (3) Vehicular and hand-held radios
 - (4) PABX telephone switching equipment
 - (5) PABX telephone instruments
 - (6) Public address amplifiers
 - (7) Public address speakers
 - (8) Cable transmission system cable
 - (9) Cable transmission system multiplex equipment
 - (10) Communication console at central control
 - (11) Uninterruptible power supply inverters/rectifiers
 - (12) Uninterruptible power supply batteries
 - (13) Data transmission system central processors
 - (14) Data transmission system remote terminals
 - (15) Line printers for data transmission system
 - (16) Communication system monitor test panel
 - (17) Security console at central control
 - (18) Antennas;
 - (19) Wireless Telemetry Equipment;
 - (20) Passenger Information Displays;
 - (21) Communications Control Units;
 - (22) Communication Control Heads;
 - (23) Wireless Intercar Transceivers;
 - (24) Multiplexers;
 - (25) SCADA Systems;
 - (26) LED Arrays;
 - (27) Screen Displays such as LEDs and LCDs for communication systems;

- (28) Fiber-optic transmission equipment;
- (29) Fiber-optic transmission equipment;
- (30) Frame or cell based multiplexing equipment; 13) Communication system network elements.
- (v) Traction power equipment includes, but is not limited to the following:
 - (1) Primary AC switch gear
 - (2) Primary AC transformer rectifiers
 - (3) DC switch gear
 - (4) Traction power console and CRT display system at central control
 - (5) Bus ducts with buses (AC and DC)
 - (6) Batteries
 - (7) Traction power rectifier assemblies
 - (8) Distribution panels (AC and DC)
 - (9) Facility step-down transformers
 - (10) Motor control centers (facility use only)
 - (11) Battery chargers
 - (12) Supervisory control panel
 - (13) Annunciator panels
 - (14) Low voltage facility distribution switch board
 - (15) DC connect switches
 - (16) Negative bus boxes
 - (17) Power rail insulators
 - (18) Power cables (AC and DC)
 - (19) Cable trays
 - (20) Instrumentation for traction power equipment
 - (21) Connectors, tensioners, and insulators for overhead power wire systems
 - (22) Negative drainage boards
 - (23) Inverters
 - (24) Traction motors
 - (25) Propulsion gear boxes
 - (26) Third rail pick-up equipment
 - (27) Pantographs

- (28) Propulsion Control Systems;
 - (29) Surge Arrestors;
 - (30) Protective Relaying.
 - (31) Bimetallic power rail.
- (w) The power or third rail is not considered traction power equipment and is thus subject to the requirements of 49 U.S.C. 5323(j) and the requirements of § 661.5.
- (x) A bidder on a contract for an item covered by 49 U.S.C. 5323(j) who will comply with section 165(b)(3) and regulations in this section is not required to follow the application for waiver procedures set out in § 661.9. In lieu of these procedures, the bidder must submit the appropriate certificate required by § 661.12.

Appendix A to § 661.11—General Waivers

(a) The provisions of § 661.11 of this part do not apply when foreign sourced spare parts for buses and other rolling stock (including train control, communication, and traction power equipment) whose total cost is 10 percent or less of the overall project contract cost are being procured as part of the same contract for the major capital item.

(b) [Reserved]

Appendix B to § 661.11—Typical Components of Buses

The following is a list of items that typically would be considered components of a bus. This list is not all-inclusive.

Car body shells, engines, transmissions, front axle assemblies, rear axle assemblies, drive shaft assemblies, front suspension assemblies, rear suspension assemblies, air compressor and pneumatic systems, generator/alternator and electrical systems, steering system assemblies, front and rear air brake assemblies, air conditioning compressor assemblies, air conditioning evaporator/condenser assemblies, heating systems, passenger seats, driver's seat assemblies, window assemblies, entrance and exit door assemblies, door control systems, destination sign assemblies, interior lighting assemblies, front and rear end cap assemblies, front and rear bumper assemblies, specialty steel (structural steel tubing, etc.) aluminum extrusions, aluminum, steel or fiberglass exterior panels, and interior trim, flooring, and floor coverings.

Appendix C to § 661.11—Typical Components of Rail Rolling Stock

The following is a list of items that typically would be considered components of rail rolling stock. This list is not all inclusive.

Car shells, engines, main transformer, pantographs, traction motors, propulsion gear boxes, interior linings, acceleration and braking resistors, propulsion controls, low voltage auxiliary power supplies, air conditioning equipment, air brake compressors, brake controls, foundation brake equipment, articulation assemblies, train control systems, window assemblies, communication equipment, lighting, seating, doors, door actuators and controls, wheelchair lifts and ramps to make the vehicle accessible to persons with disabilities, couplers and draft gear, trucks, journal bearings, axles, diagnostic equipment, and third rail pick-up equipment.

Appendix D to § 661.11—Minimum Requirements for Final Assembly

(a) Rail Cars: In the case of the manufacture of a new rail car, final assembly would typically include, as a minimum, the following operations: installation and interconnection of propulsion control equipment, propulsion cooling equipment, brake equipment, energy sources for auxiliaries and controls, heating and air conditioning, communications equipment, motors, wheels and axles, suspensions and frames; the inspection and verification of all installation and interconnection work; and the in-plant testing of the stationary product to verify all functions.

(b) Buses: In the case of a new bus, final assembly would typically include, at a minimum, the installation and interconnection of the engine, transmission, axles, including the cooling and braking systems; the installation and interconnection of the heating and air conditioning equipment; the installation of pneumatic and electrical systems, door systems, passenger seats, passenger grab rails, destination signs, wheelchair lifts; and road testing, final inspection, repairs and preparation of the vehicles for delivery.

(c) If a manufacturer's final assembly processes do not include all the activities that are typically considered the minimum requirements, it can request a Federal Transit Administration (FTA) determination of compliance. FTA will review these requests on a case-by-case basis to determine compliance with Buy America.

[61 FR 6302, Feb. 16, 1996, as amended at 62 FR 40954, July 31, 1997; 72 FR 53697, Sept. 20, 2007; 72 FR 55103, Sept. 28, 2007; 74 FR 30239, June 25, 2009]

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

If buses or other rolling stock (including train control, communication, and traction power equipment) are being procured, the appropriate certificate as set forth below shall be completed and submitted by each bidder in accordance with the requirement contained in § 661.13(b) of this part.

Certificate of Compliance with Buy America Rolling Stock Requirements

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j), and the applicable regulations of 49 CFR 661.11.

Date _____

Signature _____

Company _____

Name _____

Title _____

Certificate of Non-Compliance with Buy America Rolling Stock Requirements

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j), but may qualify for an exception to the requirement consistent with 49 U.S.C. 5323(j)(2)(C), and the applicable regulations in 49 CFR 661.7.

Date _____
Signature _____
Company _____
Name _____
Title _____

[71 FR 14117, Mar. 21, 2006, as amended at 72 FR 53698, Sept. 20, 2007; 74 FR 30239, June 25, 2009]

§ 661.13 Grantee responsibility.

- (a) The grantee shall adhere to the Buy America clause set forth in its grant contract with FTA.
- (b) The grantee shall include in its bid or request for proposal (RFP) specification for procurement within the scope of this part an appropriate notice of the Buy America provision. Such specifications shall require, as a condition of responsiveness, that the bidder or offeror submit with the bid or offer a completed Buy America certificate in accordance with §§ 661.6 or 661.12 of this part, as appropriate.
 - (1) A bidder or offeror who has submitted an incomplete Buy America certificate or an incorrect certificate of noncompliance through inadvertent or clerical error (but not including failure to sign the certificate, submission of certificates of both compliance and non-compliance, or failure to submit any certification), may submit to the FTA Chief Counsel within ten (10) days of bid opening of submission or a final offer, a written explanation of the circumstances surrounding the submission of the incomplete or incorrect certification in accordance with 28 U.S.C. 1746, sworn under penalty of perjury, stating that the submission resulted from inadvertent or clerical error. The bidder or offeror will also submit evidence of intent, such as information about the origin of the product, invoices, or other working documents. The bidder or offeror will simultaneously send a copy of this information to the FTA grantee.
 - (i) The FTA Chief Counsel may request additional information from the bidder or offeror, if necessary. The grantee may not make a contract award until the FTA Chief Counsel issues his/her determination, except as provided in § 661.15(m).
 - (ii) [Reserved]
 - (2) For negotiated procurements, compliance with the Buy America requirements shall be determined on the basis of the certification submitted with the final offer or final revised proposal. However, where a grantee awards on the basis of initial proposals without discussion, the certification submitted with the initial proposal shall control.
 - (3) Certification based on ignorance of the proper application of the Buy America requirements is not an inadvertent or clerical error.

- (c) Whether or not a bidder or offeror certifies that it will comply with the applicable requirement, such bidder or offeror is bound by its original certification (in the case of a sealed bidding procurement) or its certification submitted with its final offer (in the case of a negotiated procurement) and is not permitted to change its certification after bid opening or submission of a final offer. Where a bidder or offeror certifies that it will comply with the applicable Buy America requirements, the bidder, offeror, or grantee is not eligible for a waiver of those requirements.

[56 FR 932, Jan. 9, 1991, as amended at 68 FR 9799, Feb. 28, 2003; 71 FR 14117, Mar. 21, 2006]

§ 661.15 Investigation procedures.

- (a) It is presumed that a bidder or offeror who has submitted the required Buy America certificate is complying with the Buy America provision. A false certification is a criminal act in violation of 18 U.S.C. 1001.
- (b) Any party may petition FTA to investigate the compliance of a successful bidder or offeror with the bidder's or offeror's certification. That party ("the petitioner") must include in the petition a statement of the grounds of the petition and any supporting documentation. If FTA determines that the information presented in the petition indicates that the presumption in paragraph (a) of this section has been overcome, FTA will initiate an investigation.
- (c) In appropriate circumstances, FTA may determine on its own to initiate an investigation without receiving a petition from a third party.
- (d) When FTA determines under paragraph (b) or (c) of this section to conduct an investigation, it requests that the grantee require the successful bidder or offeror to document its compliance with its Buy America certificate. The successful bidder or offeror has the burden of proof to establish that it is in compliance. Documentation of compliance is based on the specific circumstances of each investigation, and FTA will specify the documentation required in each case.
- (e) The grantee shall reply to the request under paragraph (d) of this section within 15 working days of the request. The investigated party may correspond directly with FTA during the course of investigation, if it informs the grantee that it intends to do so, and if the grantee agrees to such action in writing. The grantee must inform FTA, in writing, that the investigated party will respond directly to FTA. An investigated party may provide confidential or proprietary information (see paragraph (l) of this section) directly to FTA while providing other information required to be submitted as part of the investigation through the grantee.
- (f) Any additional information requested or required by FTA must be submitted within 5 working days after the receipt of such request unless specifically exempted by FTA.
- (g) The grantee's reply (or that of the bidder or offeror) will be transmitted to the petitioner. The petitioner may submit comments on the reply to FTA within 10 working days after receipt of the reply. The grantee and the low bidder or offeror will be furnished with a copy of the petitioner's comments, and their comments must be received by FTA within 5 working days after receipt of the petitioner's comments.
- (h) The failure of a party to comply with the time limits stated in this section may result in resolution of the investigation without consideration of untimely filed comments.
- (i) During the course of an investigation, with appropriate notification to affected parties, FTA may conduct site visits of manufacturing facilities and final assembly locations as it considers appropriate.

- (j) FTA will, upon request, make available to any interested party information bearing on the substance of the investigation which has been submitted by the petitioner, interested parties or grantees, except to the extent that withholding of information is permitted or required by law or regulation.
- (k) If a party submitting information considers that the information submitted contains proprietary material which should be withheld, a statement advising FTA of this fact may be included, and the alleged proprietary information must be identified wherever it appears. Any comments on the information provided shall be submitted within a maximum of ten days.
- (l) For purposes of paragraph (j) of this section, confidential or proprietary material is any material or data whose disclosure could reasonably be expected to cause substantial competitive harm to the party claiming that the material is confidential or proprietary.
- (m) When a petition for investigation has been filed before award, the grantee will not make an award before the resolution of the investigation, unless the grantee determines that:
 - (1) The items to be procured are urgently required;
 - (2) Delivery of performance will be unduly delayed by failure to make the award promptly; or
 - (3) Failure to make prompt award will otherwise cause undue harm to the grantee or the Federal Government.
- (n) In the event that the grantee determines that the award is to be made during the pendency of an investigation, the grantee will notify FTA before to making such award. FTA reserves the right not to participate in the funding of any contract awarded during the pendency of an investigation.
- (o) Initial decisions by FTA will be in written form. Reconsideration of an initial decision of FTA may be requested by any party involved in an investigation. FTA will only reconsider a decision only if the party requesting reconsideration submits new matters of fact or points of law that were not known or available to the party during the investigation. A request for reconsideration of a decision of FTA shall be filed not later than ten (10) working days after the initial written decision. A request for reconsideration will be subject to the procedures in this section consistent with the need for prompt resolution of the matter.

[56 FR 932, Jan. 9, 1991, as amended at 71 FR 14118, Mar. 21, 2006]

§ 661.17 Failure to comply with certification.

If a successful bidder or offeror fails to demonstrate that it is in compliance with its certification, it will be required to take the necessary steps in order to achieve compliance. If a bidder or offeror takes these necessary steps, it will not be allowed to change its original bid price or the price of its final offer. If a bidder or offeror does not take the necessary steps, it will not be awarded the contract if the contract has not yet been awarded, and it is in breach of contract if a contract has been awarded.

[71 FR 14118, Mar. 21, 2006]

§ 661.18 Intentional violations.

A person shall be ineligible to receive any contract or subcontract made with funds authorized under the Federal Public Transportation Act of 2005 pursuant to part 29 of this title if it has been determined by a court or Federal agency that the person intentionally—

- (a) Affixed a label bearing a “Made in America” inscription, or an inscription with the same meaning, to a product not made in the United States, but sold in or shipped to the United States and used in projects to which this section applies, or
- (b) Otherwise represented that any such product was produced in the United States.

[61 FR 6303, Feb. 16, 1996, as amended at 72 FR 53698, Sept. 20, 2007]

§ 661.19 Sanctions.

A willful refusal to comply with a certification by a successful bidder or offeror may lead to the initiation of debarment or suspension proceedings under part 29 of this title.

[71 FR 14118, Mar. 21, 2006]

§ 661.20 Rights of parties.

- (a) A party adversely affected by an FTA action under this subsection shall have the right to seek review under the Administrative Procedure Act (APA), 5 U.S.C. 702 *et seq.*
- (b) Except as provided in paragraph (a) of this section, the sole right of any third party under the Buy America provision is to petition FTA under the provisions of § 661.15 of this part. No third party has any additional right, at law or equity, for any remedy including, but not limited to, injunctions, damages, or cancellation of the Federal grant or contracts of the grantee.

[71 FR 14118, Mar. 21, 2006]

§ 661.21 State Buy America provisions.

- (a) Except as provided in paragraph (b) of this section, any State may impose more stringent Buy America or buy national requirements than contained in section 165 of the Act and the regulations in this part.
- (b) FTA will not participate in contracts governed by the following:
 - (1) State Buy America or Buy National preference provisions which are not as strict as the Federal requirements.
 - (2) State and local Buy National or Buy America preference provisions which are not explicitly set out under State law. For example, administrative interpretations of non-specific State legislation will not control.
 - (3) State and local Buy Local preference provisions.

2020 STANDARD DETAIL UPDATES

Standard Details and Standard Detail updates are available at:
<http://maine.gov/mdot/contractors/publications/standarddetail/>

<u>Detail #</u>	<u>Description</u>	<u>Revision Date</u>
502(19)	Bridge Drains	3/17/2023
502(15)	Bridge Drains	3/17/2023
502(20)	Bridge Drains	3/17/2023
502(23)	Bridge Drains	3/17/2023
502(24)	Bridge Drains	3/17/2023
502(25)	Bridge Drains	3/17/2023
502(26)	Bridge Drains	3/17/2023
504(07)	Diaphragm & Crossframe Notes	3/17/2023
507(20)	Steel Approach Railing 3-Bar	2/11/2021
507(21)	Steel Approach Railing 3-Bar	2/11/2021
507(22)	Steel Approach Railing 3-Bar	2/11/2021
507(23)	Steel Approach Railing 3-Bar	2/11/2021
507(27)	Steel Approach Railing	2/11/2021
526(01)	Portable Concrete Barrier	1/14/2021
526(01A)	Portable Concrete Barrier	1/14/2021
526(01B)	Portable Concrete Barrier	1/14/2021
526(02)	Portable Concrete Barrier	1/14/2021
526(02A)	Portable Concrete Barrier	1/14/2021
526(03)	Portable Concrete Barrier	1/14/2021
526(04)	Portable Concrete Barrier	1/14/2021
526(04A)	Portable Concrete Barrier	1/14/2021
526(04B)	Portable Concrete Barrier	1/14/2021
526(05)	Permanent Concrete Barrier	3/17/2023
526(21)	Permanent Concrete Barrier	3/17/2023
526(22)	Concrete Transition Barrier	3/17/2023
526(38)	Concrete Transition Barrier	3/17/2023
526(39)	Texas Classic Rail	3/17/2023
526(55)	Texas Classic Rail	3/17/2023

603(10)	Concrete Pipe Ties	6/10/2021
605(01)	Underdrain	7/8/2022
605(01)	Underdrain Notes	7/8/2022
606(17)	Midway Splice Guardrail Transition	6/10/2022
606(23)	Standard Bridge Transition – Type “1”	2/11/2021
606(24)	Standard Bridge Transition – Type “1A”	2/11/2021
608(02)	Detectable Warnings	6/10/2021
609(09)	Precast Concrete Vertical Curb	2/11/2021
627(07)	Crosswalk	2/22/2022
627(08)	Crosswalk	2/22/2022
643(11)	ATCC Cabinet	12/14/2020
801(11)	Pedestrian Ramp Notes	11/20/2023
801(12)	Pedestrian Ramp Requirements	11/20/2023
801(13)	Ramp Length Table	11/20/2023
801(14)	Parallel Pedestrian Ramp	11/20/2023
801(15)	Perpendicular Pedestrian Ramp – Option 1	11/20/2023
801(16)	Parallel Pedestrian Ramp – Option 2A	11/20/2023
801(17)	Perpendicular Pedestrian Ramp – Option 2A	11/20/2023
801(18)	Parallel Pedestrian Ramp – Option 2B	11/20/2023
801(19)	Perpendicular Pedestrian Ramp – Option 2B	11/20/2023
801(20)	Parallel Pedestrian Ramp – Option 3	11/20/2023
801(21)	Perpendicular Pedestrian Ramp – Option 3	11/20/2023
801(22)	Side Street Pedestrian Ramp	11/20/2023
801(23)	Parallel Pedestrian Ramp – Esplanade	11/20/2023
801(24)	Perpendicular Pedestrian Ramp – Esplanade	11/20/2023
801(25)	Island Crossings	11/20/2023
801(26)	Blended Transition	11/20/2023
801(26)	Blended Transition	1/19/2024
801(27)	Pedestrian Ramp Adjacent to Driveway or Entrance	11/20/2023
802(05)	Roadway Culvert End Slope Treatment	1/03/2017

SUPPLEMENTAL SPECIFICATIONS
(Corrections, Additions, & Revisions to Standard Specifications – March 2020)

SECTION 101
CONTRACT INTERPRETATION

101.2 Definitions

Construction Easement revise this definition by removing it in its entirety and replace with:
“A right acquired by the Department for a specific use of private property outside of the established Right-of-Way. Examples include but are not limited to Drainage Easements, Construction and Maintenance Easements, and Slope Easements. Construction Easement areas, including Temporary Construction Limits and Temporary Road Limits, outside of the Right-of-Way remain private property. No use other than to access and perform the specified work activity is permitted without written permission of the owner.”

Construction Limit Line Remove this definition in its entirety.

Holidays Amend this paragraph by adding “**Juneteenth**” between ‘Memorial Day’ and ‘Independence Day’.

Plans Revise this paragraph by removing “**Standard Details, Supplemental Standard Details**” from the first sentence.

Project Limits Revise this definition by removing it in its entirety and replacing it with:
“Areas within the Right-of-Way, Construction Easements, or Temporary Construction Limits shown on the Plans or otherwise indicated in the Contract. If no Project Limits are indicated in the Contract, the Project Limits shall be determined by the Department. For a related Maine statute, see 23 MRSA § 653. “

Right-Of-Way Revise this definition by removing it in its entirety and replacing it with:
“The area of land, property, or interest therein, acquired for or devoted to the Project or other purposes. Portions of the Right-of-Way may be used for storage of materials and equipment and the location of engineering facilities, subject to written approval by the Department.”

Amend this Section by adding the following two definitions (that replace Construction Limit Line);

Temporary Construction Limits **The area within which the Contractor may access and perform the Physical Work and outside of which Work may not be performed without written authorization by the property owner.**

Temporary Road Limits **The area within which the Contractor may construct and maintain a temporary detour for maintenance of traffic.**

SECTION 102 BIDDING

102.11 Bid Responsiveness Revise the paragraph that states
“The Bid is not signed by a duly authorized representative of the Bidder.” So that it reads:

“The Bid is not signed by a duly authorized representative of the Bidder.

- Properly submitted electronic bids meet this requirement.
- Paper bids must include at least one signed copy of the Contract Agreement Offer & Award form.”

SECTION 103 AWARD AND CONTRACTING

103.3.1 Qualification Requirement for Award Revise this subsection so that it reads:

“103.3.1 Qualification Requirement for Award If the Notice to Contractors lists a Prequalification requirement, the Apparent Successful Bidder must successfully complete the Prequalification process as a condition of Award. The Apparent Successful Bidder who does not already hold an Annual Prequalification shall have 21 days to provide the Department with their Prequal documents or the Department may move on to the next low bidder.”

SECTION 104 GENERAL RIGHTS AND RESPONSIBILITIES

104.2.1 Furnishing of Right-of-Way Revise this subsection by removing it in its entirety and replace with the new subsection:

“104.2.1 Furnishing of Property Rights The Department will secure all necessary rights to real property within the Project Limits shown on the Right-of-Way Plans that are provided with the Bid Documents. For related provisions, see Sections 104.3.2 – Furnishing of Other Property Rights, Licenses and Permits and 105.4.5 - Maintenance of Existing Structures. For related definitions, see Construction Easements and Right-of-Way.”

104.3.2 Furnishing of Other Property Rights, Licenses and Permits Revise this subsection by replacing “104.2.1 Furnishing of Right-of-Way” with “**104.2.1 Furnishing of Property Rights**”.

SECTION 105 GENERAL SCOPE OF WORK

105.10.2 Requirements Applicable to All Contracts Under section A, number 2, in the first sentence of the first paragraph, revise this Section by replacing the word “handicap” in two places with the word “disability” so it now reads:

“2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, State that all qualified applicants will receive consideration for employment without regard to race, color, sexual orientation, religious creed, sex, national origin, ancestry, age, physical disability, or mental disability.”

SECTION 106 QUALITY

106.6 Acceptance Revise this Subsection by replacing the paragraph beginning with “Acceptance of Hot Mix Asphalt Pavement will be based” with:

“Acceptance of Hot Mix Asphalt Pavement will be based on Method A or C Statistical Acceptance, or Method B or D Acceptance as specified. The method of acceptance for each item is defined in Special Provision, Section 403, Hot Mix Asphalt Pavement. When items of Hot Mix Asphalt Pavement are not so designated, Method A will be utilized whenever there are more than 1000 tons per Hot Mix Asphalt Pavement item, and Method B will be utilized when there are less than or equal to 1000 tons per Hot Mix Asphalt Pavement item.”

Revise Subsection “B” by removing it and replacing it with:

“B. Items not designated for Statistical Acceptance will utilize Method B or D Acceptance testing to validate the quality of the material incorporated into the Project. For material paid under Item 403.209 – Method D, or designated to be visually accepted, the Contractor shall provide the Department with a Certification Letter that indicates that the material supplied complies with the Specifications. Test results representative of the certified material shall be attached to the letter.

The Department will randomly sample and test the certified Material for properties noted in Table 1 of Section 502 - Structural Concrete or Table 14 of Section –401.21 Acceptance Method B & D. Material will be subject to rejection as noted in Structural Concrete Section 502.195 - Quality Assurance Method C Concrete or Hot Mix Asphalt, Section 401.2022 Pay Adjustment – Method B & D.”

106.7.1 Standard Deviation Method Revise 106.7.1, subsection H by removing the following from the first paragraph:

“Method B: $PF = [70 + (Quality\ Level * 0.33)] * 0.01$ ”

106.9.1 Warranty by Contractor Revise the third paragraph of this section so that it reads:

“For a related provision regarding obligations regarding plantings, see section 621.36 – Maintenance Period. “

SECTION 107 TIME

107.3.1 General Amend this paragraph by adding **“Juneteenth”** between ‘Patriot’s Day’ and ‘the Friday after Thanksgiving’.

SECTION 108 PAYMENT

108.2.3 Mobilization Payments Replace Standard Specification 108.2.3 – Mobilization Payments with the following:

“108.2.3 Mobilization Payments “Mobilization” includes the mobilization and demobilization of all resources as many times as necessary during the Work.

Percent Mobilization Bid will be determined by taking the amount Bid for Mobilization and dividing by the Total Contract Amount less Mobilization. Mob/(Total Contract – Mob).

Payment will be made at the following intervals:

% Mobilization Bid	% Mobilization Paid at Contract Award	% Mobilization Paid after the Department determines 50% of the work is Complete	% Mobilization Paid at Final Acceptance
10% or less	50%	50%	
More than 10% to 15%	33%	33%	34%
More than 15% to 20%	25%	25%	50%
More than 20% to 30%	15%	15%	70%
Greater than 30%	10%	10%	80%

108.3 Retainage Revise the third paragraph of this section so that it reads:

“Upon Final Acceptance, and determination by the department that there are no claims either by or on the Contractor or Subcontractors; no over payments by the department; no LDs due; and no disincentives due, the Department will reduce Retent to 1% of the original Contract Award amount, or \$100,000, whichever is less, as it deems desirable and prudent.”

108.4.1 Price Adjustment for Hot Mix Asphalt Revise this section by removing it in its entirety and replacing it with the following:

“108.4.1 Price Adjustment for Hot Mix Asphalt: For each Contract, a price adjustment for performance graded binder will be made for the following pay items, when the total quantity of Hot Mix Asphalt included in these items is in excess of 500 tons, based on the estimated quantities of these items at the time of bid.

Item 403.102	Hot Mix Asphalt – Special Areas
Item 403.207	Hot Mix Asphalt - 19 mm
Item 403.2071	Hot Mix Asphalt - 19 mm (Polymer Modified)
Item 403.2072	Hot Mix Asphalt - 19 mm (Asphalt Rich Base)
Item 403.208	Hot Mix Asphalt - 12.5 mm
Item 403.2081	Hot Mix Asphalt - 12.5 mm (Polymer Modified)
Item 403.2084	Hot Mix Asphalt - 12.5 mm (Highly Modified HiMAP)
Item 403.209	Hot Mix Asphalt - 9.5 mm (sidewalks, drives, & incidentals)
Item 403.210	Hot Mix Asphalt - 9.5 mm
Item 403.2101	Hot Mix Asphalt - 9.5 mm (Polymer Modified)
Item 403.2104	Hot Mix Asphalt - 9.5 mm (Thin Lift Surface Treatment)
Item 403.21041	Hot Mix Asphalt - 9.5 mm (Polymer Modified Thin Lift Surface Treatment)
Item 403.211	Hot Mix Asphalt – Shim
Item 403.2111	Hot Mix Asphalt – Shim (Polymer Modified)
Item 403.212	Hot Mix Asphalt - 4.75 mm (Shim)
Item 403.213	Hot Mix Asphalt - 12.5 mm (base and intermediate course)
Item 403.2131	Hot Mix Asphalt - 12.5 mm (base and intermediate course Polymer Modified)
Item 403.2132	Hot Mix Asphalt - 12.5 mm (Asphalt Rich Base and intermediate course)
Item 403.301	Hot Mix Asphalt (Asphalt Rubber Gap-Graded)
Item 461.13	Light Capital Pavement
Item 461.210	9.5 mm HMA - Paver Placed Surface
Item 461.2101	Hot Mix Asphalt - 9.5 mm (Polymer Modified)
Item 461.216	Hot Mix Asphalt (Shim)
Item 462.30	Ultra-Thin Bonded Wearing Course
Item 462.301	Polymer Modified Ultra-Thin Bonded Wearing Course

Price adjustments will be based on the variance in costs for the performance graded binder component of hot mix asphalt. They will be determined as follows:

The quantity of hot mix asphalt for each pay item will be multiplied by the performance graded binder percentages given in the table below times the difference in price between the base price and the period price of asphalt cement. Adjustments will be made upward or downward, as prices increase or decrease.

Item 403.102–6.2%
Item 403.207–5.2%
Item 403.2071–5.2%
Item 403.2072–5.8%
Item 403.208–5.6%
Item 403.2081–5.6%
Item 403.2084 – 6.2%
Item 403.209–6.2%
Item 403.210–6.2%
Item 403.2101–6.2%
Item 403.2104–6.2%
Item 403.21041–6.2%
Item 403.211–6.2%
Item 403.2111–6.2%
Item 403.212–6.8%
Item 403.213–5.6%
Item 403.2131–5.6%
Item 403.2132–6.2%
Item 403.301–6.2%
Item 461.13–6.7%
Item 461.210 – 6.4%
Item 461.2101 – 6.4%
Item 461.216 – 6.7%
Item 462.30–0.0021 tons/SY
Item 462.301–0.0021 tons/SY”

SECTION 110 INDEMNIFICATION, BONDING, AND INSURANCE

110.3.9 Administrative & General Provisions Amend this subsection by adding “**Automobile Liability**” under letter A) Additional Insured to the list of exceptions.

SECTION 206 STRUCTURAL EXCAVATION

206.01 Description – *Structural Earth Excavation, Below Grade* delete the entire sentence and replace with “**shall consist of the removal of excavation required for unknown or unanticipated subsurface condition. See 206.04 – Method of Measurement for pay limits.**”

206.04 Method of Measurement – Drainage and Minor Structures Paragraph 1, sentence 2, delete the remainder of the sentence beginning with “....provided the maximum allowable...” And replace with: “**....in accordance with the following limits:**”

- **Vertical pay limits:**
 - **Below a plane parallel with and 12 inches below the bottom of the drainage or minor structure or**
 - **Below the excavation limits shown in the Bid Documents; whichever is greater.**
- **Horizontal pay limits – The maximum allowable horizontal dimensions shall not exceed those bounded by vertical surfaces 18 inches outside the base, or extreme limits of, the structure, and to the vertical neat lines of underdrain trenches, as shown in the Contract Documents.**

SECTION 401 HOT MIX ASPHALT PAVEMENT

401.19 Contractor Quality Control Amend this Section by adding the following to the end:
“**Failure to comply with the approved QCP will result in work suspension and pay reductions as outlined in Section 106.4.6. The Quality Control Plan Value shall be the total bid value for all items covered by the QCP as identified in Special Provision 403.**”

SECTION 501 FOUNDATION PILES

501.05 Method of Measurement

c. Piles in Place Revise the third paragraph by replacing the “10” with “20” so that it reads:

Unused pile cutoffs **20** feet or more in length, except those required to accommodate the Contractor’s construction method, as discussed herein, will remain the property of the Department and will be stored at a bridge maintenance yard nearest the project. Hauling and unloading of piles will be done by the Contractor or by the Department, depending upon availability of services.

SECTION 502 STRUCTURAL CONCRETE

502.09 Forms and Falsework Amend this subsection by adding the subsection title “**502.10 Placing Concrete**” after section “D” Removal of Forms and False work” and after the paragraph beginning with “2. Forms and False work, including blocking...”. So that a new subsection starts and reads:

“502.10 Placing Concrete

A. **General** Concrete shall not be placed until forms”

502.1701 Quality Control, Method A and B Revise this Section so that the first paragraph and the first sentence of the second paragraph read:

“502.17 Quality Control The Contractor shall control the quality of the concrete through testing, inspection, and practices which shall be described in the QCP, sufficient to assure a product meeting the Contract requirements. The QCP shall meet the requirements of Section 106, Quality, and this specification. No work under this item shall proceed until the QCP is submitted to and approved by the Department. Failure to comply with the approved QCP will result in work suspension and pay reductions as outlined in Section 106.4.6. The Quality Control Plan Value shall be the total bid value for all cast-in-place items covered by the QCP, using the P value listed in Special Provision 502. If no P value is listed, a value of \$350, or bid value per cubic yard, whichever is less, shall be used.

502.1701 Quality Control, Method A and B The QCP shall address all elements that affect the quality of the structural concrete including, but not limited to, the following: “

Section 502.1701, Quality Control, Revise Table 4 of this Subsection by removing it in its entirety and replacing it with:

TABLE 4
METHOD A & B MINIMUM QUALITY CONTROL TESTING REQUIREMENTS *

TEST	TEST METHOD	SAMPLING LOCATION	FREQUENCY
Gradation	AASHTO T-27 & T-11	Stockpile	One set per proposed grading before production. One set every 100 yd ³ (Min. 1 set per month)
Organic Impurities	AASHTO T-21	Stockpile	Once per fine aggregate per year **
% Absorption	AASHTO T-84 & T-85	Stockpile	Once per aggregate per year
Specific Gravity	AASHTO T-84 & T-85	Stockpile	Once per aggregate per year
Total Moisture in Aggregate	AASHTO T-255	Stockpile	One set per day’s production

Free Water and Aggregate Wt.	N/A		One per day's production
% Entrained Air	AASHTO T-152	On Project	On first two loads and every third load thereafter provided consistent results are achieved
Compressive Strength	AASHTO T-22	On Project	One set per subplot
Compressive Strength	AASHTO T-22 @ 7days	On Project	One set per subplot

* Additional QC testing will be required any time a process change occurs during a placement, including changes in type or dosage of admixture. Additional testing shall include, but is not limited to, entrained air testing.

**** If the color produced is a laboratory designation Plate III, then the fine aggregate shall be tested once per month.**

502.18, Method of Measurement, Revise Subsection 'F' by removing the word 'transverse' so that it reads: **"Saw cut grooving of concrete wearing surfaces, complete and accepted, will be measured for payment as one lump sum."**

502.19, Basis of Payment, Revise the third paragraph by removing the word 'transverse' so that it reads: **"Saw cut grooving of concrete wearing surfaces will be paid for at the Contract Lump Sum Price, which shall be payment for furnishing all materials, labor, and equipment, including depth gauges and all incidentals, to satisfactorily complete the work."**

(Also see 535.24 and 535.25 for related changes)

SECTION 503 REINFORCING STEEL

Section 503.07 Splicing Revise this section by removing the table and following footnote and replacing them with:

Minimum Lap Splice Length (inches)									
Bar Type	Bar Size								
	#3	#4	#5	#6	#7	#8	#9	#10	#11
Plain or Galvanized	16	20	24	29	38	47	59	72	85
Epoxy or Dual Coated	17	24	36	43	56	71	88	107	128
Stainless	19	24	30	36	47	59	73	89	107
Low-carbon Chromium	24	32	39	47	63	78	97	119	142

“The minimum lap splice lengths in the table above are based on the parameters below. When any of these parameters are altered, appropriate minimum lap splice lengths will be as shown on the Plans.

- **Normal weight concrete**
- **Minimum 28-day concrete compressive strength from 4,000 psi to 10,000 psi**
- **Class B tension lap splice**
- **Minimum center-to-center spacing between bars of 6 inches**
- **Minimum clear cover of 2 inches**
- **Nominal reinforcing steel yield strengths**
 - **Low-carbon Chromium = 100 ksi**
 - **Stainless = 75 ksi**
 - **All others = 60 ksi**
- **Reinforcement with yield strengths greater than 75 ksi shall have beam transverse reinforcement and column ties provided over the required lap splice length in accordance with the current edition of the AASHTO LRFD Bridge Design Specifications**

When lap splices are placed horizontally in an element where the concrete depth below the splice will be 12 inches, or more, the indicated lap splice lengths shall be multiplied by a factor of 1.3.”

SECTION 506 SHOP APPLIED PROTECTIVE COATING – STEEL

506.13 Surface Preparation Amend this section by adding this paragraph to the end:

“Steel shall meet the requirements of SSPC SP8 Pickling prior to being immersed in the zinc tanks. Verification of the surface preparation shall be included in the QC documentation.”

SECTION 523 BEARINGS

523.051 Protective Coating Revise this subsection by removing the paragraph beginning with “Anchor rods shall be galvanized...” and replacing with:

“Anchor rods shall be galvanized. When anchor rods are designated to secure bare unpainted steel or painted steel, a dielectric coating (epoxy or bituminous type coatings are acceptable) shall be applied to the anchor rod and/or adjacent steel to prevent contact between galvanized surfaces and painted or unpainted steel.”

523.22 Fabrication Amend this subsection by adding the following: **“Elastomeric Bearings shall be fabricated in accordance with AASHTO M251.”**

SECTION 526 CONCRETE BARRIER

Amend this section by deleting it in its entirety and replacing it with:

“526.01 Description This work shall consist of the furnishing, constructing, erecting, setting, resetting, and removal of concrete barrier and associated elements in accordance with these specifications, the Standard Details, and the lines and grades shown on the Plans or established by the Resident.

The types of concrete barrier are designated as follows:

Portable Concrete Barrier Type I Double faced removable barrier in accordance with the Standard Details.

Permanent Concrete Barrier Type II Double faced barrier as shown on the Plans.

Permanent Concrete Barrier Type IIIa Single faced barrier 32 inches high in accordance with the Standard Details or as shown on the Plans.

Permanent Concrete Barrier Type IIIb Single faced barrier 42 inches high in accordance with the Standard Details or as shown on the Plans.

Permanent Concrete Transition Barrier Barrier of various heights joining steel bridge rail to steel guardrail in accordance with the Standard Details or as shown on the Plans.

Permanent Texas Classic Rail Barrier Traffic rail or sidewalk rail, in accordance with the Standard Details or as shown on the Plans.

526.02 Materials

a. **Concrete** Concrete for barriers, both permanent and portable, shall have a design strength of 5,000 psi.

For cast-in-place barrier: The concrete shall be Class LP, in accordance with Standard Specification Section 502, Structural Concrete.

For precast barrier: The concrete shall meet the requirements of Standard Specification 712.061, Structural Precast Concrete Units, except that the stripping strength for precast barriers is 4,000 psi.

b. **Reinforcing Steel** Reinforcing steel shall meet the requirements of Section 503, Reinforcing Steel.

c. **Structural Steel** Plates and barrier connections shall meet the requirements specified in Standard Specification 504 - Structural Steel and shall be hot dip galvanized after fabrication in accordance with Standard Specification 506, Shop Applied Protective Coating – Steel

d. **Bolts** Bolts shall meet the requirements specified in Section 713.02, High Strength Bolts.

e. **Connecting Pins for Portable Concrete Barrier** Portable concrete barriers must be connected using a 1- inch diameter pin. The connecting pin must be smooth, not deformed, i.e., reinforcing bar may not be used, and shall meet the strength requirements of ASTM A449 steel. Materials with greater strength may be used with the approval of the Department.

f. **Anchor Pins for Portable Concrete Barrier** Anchoring to concrete or asphalt will be required when specified on the Plans. When required, portable concrete barriers must be anchored using a 1 ½ - inch diameter anchor pin. The anchor pin must be smooth, not deformed, i.e., reinforcing bar may not be used, and shall meet the strength requirements of ASTM A36 steel. Materials with greater strength may be used with the approval of the Department.

g. **Device Crashworthiness** MaineDOT is transitioning to MASH2016 criteria for Portable Concrete Barrier on the following schedule:

New Portable Concrete Barrier shall be crash tested and/or evaluated to MASH2016 criteria.

Current Portable Concrete Barrier in useful serviceable condition that is successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.

Other current Portable Concrete Barrier that is deemed acceptable by the Department may be utilized on projects off the National Highway System through December 31, 2024.

526.03 Construction Requirements

Cast-in-place barriers shall be fabricated in accordance with Standard Specification Section 502, Structural Concrete. Precast barriers shall be fabricated in accordance with Standard Specification 534, Precast Structural Concrete.

Concrete finish for permanent barrier shall be rubbed as defined in Standard Specification Section 502, Structural Concrete, 502.13 D2 or an approved equal.

Portable concrete barrier shall be generally free from fins and porous areas and shall present a neat and uniform appearance.

Permanent barrier shall have a protective coating applied in accordance with Standard Specification Section 515, Protective Coating for Concrete Surfaces.

Reflective delineators for concrete median barrier shall meet the requirements of Special Provision 645, Highway Signing.

Preformed Joint Filler shall meet the requirements specified in Subsection 705.01, Preformed Expansion Joint Filler.

Permissible dimensional tolerances for all concrete barriers shall be as follows:

- a. Cross-sectional dimensions shall not vary from design dimensions by more than $\frac{1}{4}$ inch. The vertical centerline shall not be out of plumb by more than $\frac{1}{4}$ inch.**
- b. Longitudinal dimensions shall not vary from the design dimensions by more than $\frac{1}{4}$ inch per 10 feet of barrier section and shall not exceed $\frac{3}{4}$ inches per section.**
- c. Location of anchoring holes shall not vary by more than $\frac{1}{2}$ inch from the dimensions shown in the concrete barrier details on the Plans.**
- d. Surface straightness shall not vary more than $\frac{1}{4}$ inch under a 10-foot straightedge.**
- e. The barrier shall have no significant cracking. Significant cracking is defined as fractures or cracks passing through the section, or any continuous crack extending for a length of 12 inches or more, regardless of position in the section.**

526.04 Method of Measurement Permanent Concrete Barrier Type II, IIIa, IIIb, Texas Classic Rail, and Precast Median Barrier will be measured for payment by lump sum, complete in place.

Portable concrete barrier, both anchored and unanchored will be measured for payment by lump sum. Lump sum measurement will include verification of the installation and removal of all portable concrete at the completion of the Contractor's operations.

The Contractor shall replace sections of portable concrete barrier, including anchored barrier damaged by the traveling public when directed by the Resident. Replacement sections will be measured for payment in accordance with Standard Specification 109.7, Equitable Adjustments to Compensation and Time.

Transition barrier will be measured by each, complete in place.

526.05 Basis of Payment The accepted quantities of Concrete Barrier Type II, IIIa, IIIb, Texas Classic Rail, and Precast Median Barrier will be paid for at the Contract lump sum price for the type specified, complete in place.

The accepted quantities of Portable Concrete Barrier Type I, both anchored and unanchored will be paid for at the Contract lump sum price. Such payment shall be full compensation for furnishing all materials, assembling, moving, resetting, transporting, temporarily storing, removing barrier, furnishing new parts as necessary, and all incidentals necessary to complete the work.

Portable barrier shall become the property of the Contractor upon completion of the use of the barrier on the project and shall be removed from the project site by the Contractor.

Transition barrier will be paid for at the Contract price each, complete in place.

The accepted quantity of all types of concrete barrier, whether portable or permanent, will be paid for at the lump sum or per each price, as applicable, which payment shall be full compensation for all materials, including reinforcing steel, protective coating, reflective delineators, steel plates and hardware, equipment, labor and incidentals required, as necessary, to complete the work.

Payment will be made under:

	<u>Pay Item</u>	<u>Pay Unit</u>
526.301	Portable Concrete Barrier, Type I	Lump Sum
526.304	Portable Concrete Barrier, Anchored Type I	Lump Sum
526.312	Permanent Concrete Barrier Type II	Lump Sum
526.321	Permanent Concrete Barrier Type IIIa	Lump Sum
526.323	Texas Classic Rail	Lump Sum
526.331	Permanent Concrete Barrier Type IIIb	Lump Sum
526.34	Permanent Concrete Transition Barrier	Each
526.502	Precast Concrete Median Barrier	Lump Sum”

SECTION 527 ENERGY ABSORBING UNIT

527.02 Materials Amend this section by deleting it in its entirety and replacing it with:

“MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:

Portable Crash Cushions will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 3 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.

Work Zone Crash Cushions shall be selected from the Department’s Qualified Products List of Crash Cushions/Impact Attenuators or approved equal.”

SECTION 535 PRECAST, PRESTRESSED CONCRETE SUPERSTRUCTURE

535.22 Tolerances Amend this section by deleting it in its entirety and replacing it with:

“Product dimensional tolerances shall be in conformance with the latest edition of PCI MNL-135, Tolerance Manual for Precast and Prestressed Concrete Construction, as applicable to the particular product (e.g., slab, I-girder, box beam), the Plans, and this Specification. Use Box Beam fabrication tolerances for voided or solid slab beams and use Double Tee tolerances for NEXT beams. In case of dispute, the Fabrication Engineer shall determine the allowable tolerance.”

535.24 Installation of Slabs, Beams, and Girders Revise the 5th paragraph by replacing “6.0 and 9.0” to “5.0 and 8.0” so it reads: **“Ready mixed grout shall achieve a design compressive strength of 6,000 psi at 28 days, have an entrained air content of between 5.0 and 8.0 percent, be non-shrink, flowable, and contain a non-shrink additive listed on the Department QPL for expansive cements.”**

535.25, Installation of Precast/Prestressed Deck Panels Revise the 2nd paragraph by replacing “6.0 and 9.0” to “5.0 and 8.0” so it reads: **“Ready mixed grout shall achieve a design compressive strength of 6,000 psi at 28 days, have an entrained air content of between 5.0 and 8.0 percent, be non-shrink, flowable, and contain a non-shrink additive listed on the Department QPL for expansive cements.”**

SECTION 606
GUARDRAIL

Amend this section by replacing it with the following:

606.01 Description This work shall consist of furnishing and installing guardrail components in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans or as established. Guardrail is designated as:

31" W-Beam Guardrail - Mid-Way Splice

Galvanized steel w-beam, 8" wood or composite offset blocks, galvanized steel posts

Thrie Beam

Galvanized steel thrie beam, 8" wood or composite offset blocks, galvanized steel posts

Median guardrail shall consist of two beams of the above types, mounted on single posts.

Bridge mounted guardrail shall consist of furnishing all labor, materials, and equipment necessary to install guardrail as shown on the plans. This work shall also include drilling for and installation of offset blocks if specified, and incidental hardware necessary for satisfactory completion of the work.

Remove and Reset and Remove, Modify, and Reset guardrail shall consist of removing the existing designated guardrail and resetting in a new location as shown on the plans or directed by the Resident. Remove, Modify, and Reset guardrail and Modify guardrail include the following guardrail modifications: Removing plate washers at all posts, except at anchorage assemblies as noted on the Standard Details, adding offset blocks, and other modifications as listed in the Construction Notes or General Notes. Modifications shall conform to the guardrail Standard Details.

Bridge Connection shall consist of the installation and attachment of beam guardrail to the existing bridge. This work shall consist of constructing a concrete end post or modifying an existing end post as required, furnishing, and installing a terminal connector, necessary hardware, and incidentals required to complete the work as shown on the plans. Bridge Transition shall consist of a bridge connection and furnishing and installing guardrail components as shown in the Standard Details.

606.02 Materials Materials shall meet the requirements specified in the following Sections of Division 700 - Materials:

Timber Preservative	708.05
Metal Beam Rail	710.04
Guardrail Posts	710.07
Guardrail Hardware	710.08

Guardrail components shall meet the applicable standards of "A Guide to Standardized Highway Barrier Hardware" prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Task Force 13 Report.

Posts for underdrain delineators shall be “U” channel steel, 8 ft long, 2 ½ lb/ft minimum and have 3/8-inch round holes, 1-inch center to center for a minimum distance of 2 ft from the top of the post.

Reflectorized Flexible Guardrail Markers shall be mounted on all guardrails. A marker shall be mounted onto guardrail posts at the flared guardrail terminal end point and tangent point, both at the leading and trailing ends of each run of guardrail. The marker’s flexible posts shall be gray with either silver-white or yellow reflectors (to match the edge line striping) at the tangents, red at leading ends, and green at trailing ends. Whenever the guardrail terminal is not flared, markers will only be required at the terminal end point. These shall be red or green as appropriate. Markers shall be installed on the protected side of guardrail posts unless otherwise approved by the Resident. Reflectorized flexible guardrail markers shall be from the Department’s Qualified Products List of Delineators. The marker shall be gray, flexible, durable, and of a non-discoloring material to which 3-inch by 9-inch reflectors shall be applied, and capable of recovering from repeated impacts and meeting MASH 16 requirements. Reflective material shall meet the requirements of Section 719.01 for ASTM D 4956 Type III reflective sheeting. The marker shall be secured to the guardrail post with two fasteners, as shown in the Standard Details.

Reflectorized beam guardrail reflectors shall be mounted on all “w” beam guardrail and shall be either the “butterfly” type or linear delineation system panels. “Butterfly” or linear delineation panels shall be installed at approximately 62.5 foot intervals on tangents (after every tenth post) and 31.25 feet on curves (after every fifth post), and shall be centered on the guardrail beam. On Divided highways, the left-hand delineators shall be yellow and the right-hand delineators shall be silver/ white. On two-way directional highways, the right-hand side will have silver / white reflectors and no reflectorized delineator used on the left. Delineators shall have reflective sheeting that meets or exceeds the requirements of Section 719.01.

“Butterfly” reflectors shall be fabricated from high-impact, ultraviolet & weather resistant thermoplastic. Aluminum, galvanized metal or other materials shall not be used. Reflective sheeting will be applied to only one side of the delineator facing the direction of traffic and shall be centered vertically on the guardrail beam as shown in the Standard Detail 606(7).

Linear delineation system panels shall be 1.5 inches wide by approximately 11 inches nominal length, with a minimum of 5 raised lateral ridges spaced at approximately 2.25 inches. The height of each ridge shall be 0.34 inches with a 45 degree profile and a 0.28 inches radius at the top. Sheeting shall be laminated to thin gauge aluminum with a pre-applied adhesive tape on the back. Panels shall not be installed over seams or bolt heads and shall be centered horizontally on the guardrail beam; linear delineation panels shall be attached to only one guardrail beam. The guardrail beam surface shall be cleaned and prepared according to the manufacturer’s instructions. Air temperature and guardrail surface temperature must be a minimum of 50 degrees F (10 C) with rising temperature at the time of installation.

Exact locations of the either the “butterfly” type or the linear delineation panels shall be approved by the Resident prior to installation.

Single wood post shall be of cedar, white oak, or tamarack, well-seasoned, straight, and sound and have been cut from live trees. The outer and inner bark shall be removed, and all knots trimmed flush with the surface of the post. Posts shall be uniform taper and free of kinks and bends.

Single steel post shall conform to the requirements of Section 710.07 b.

Single steel pipe post shall be galvanized, seamless steel pipe conforming to the requirements of ASTM A120, Schedule No. 40, Standard Weight.

Acceptable multiple mailbox assemblies shall be listed on the Department's Qualified Products List and shall be MASH 16 tested and approved.

Flared and Tangent w-beam guardrail terminals and guardrail offset blocks shall be from the Department's Qualified Products List. Flared terminals shall be installed with a 4 ft offset as shown in the Manufacturer's installation instructions.

Anchorage assemblies used to anchor trailing ends, radius guardrail, or other ends not exposed to traffic shall meet the applicable standards of "A Guide to Standardized Highway Barrier Hardware" prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Task Force 13 Report, Drawing SEW02a.

Existing materials damaged or lost during adjusting, removing and resetting, or removing, modifying, and resetting, shall be replaced by the Contractor without additional compensation. Existing guardrail posts and guardrail beams found to be unfit for reuse shall be replaced when directed by the Resident.

606.03 Posts Posts for guardrail shall be set plumb in holes or they may be driven if suitable driving equipment is used to prevent battering and distorting the post. When posts are driven through pavement, the damaged area around the post shall be repaired with approved bituminous patching. Damage to lighting and signal conduit and conductors shall be repaired by the Contractor.

When set in holes, posts shall be on a stable foundation and the space around the posts, backfilled in layers with suitable material, thoroughly tamped.

The reflectorized flexible guardrail markers shall be set plumb with the reflective surface facing the oncoming traffic. Markers shall be installed on the protected side of guardrail posts. Markers, which become bent or otherwise damaged, shall be removed and replaced with new markers.

Single wood posts shall be set plumb in holes and backfilled in layers with suitable material, thoroughly tamped. The Resident will designate the elevation and shape of the top. The posts, that are not pressure treated, shall be painted two coats of good quality oil base exterior house paint.

Single steel posts shall be set plumb in holes as specified for single wood posts or they may be driven if suitable driving equipment is used to prevent battering and distorting the post.

Additional bolt holes required in existing posts shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

606.04 Rails Brackets and fittings shall be placed and fastened as shown on the plans. Rail beams shall be erected and aligned to provide a smooth, continuous barrier. Beams shall be lapped with the exposed end away from approaching traffic.

End assemblies shall be installed as shown on the plans and shall be securely attached to the rail section and end post.

All bolts shall be of sufficient length to extend beyond the nuts but not more than ½ inch. Nuts shall be drawn tight.

Additional bolt holes required in existing beams shall be drilled or punched, but the size of the holes shall not exceed the dimensions given in the Standard Details. Metal around the holes shall be thoroughly cleaned and painted with two coats of approved aluminum rust resistant paint. Holes shall not be burned.

606.045 Offset Blocks The same offset block material is to be provided for the entire project unless otherwise specified.

606.05 Shoulder Widening At designated locations the existing shoulder of the roadway shall be widened as shown on the plans. All grading, paving, seeding, and other necessary work shall be in accordance with the Specifications for the type work being done.

606.06 Mail Box Post Single wood post shall be installed at the designated location for the support of the mailbox. The multiple mailbox assemblies shall be installed at the designated location in accordance with the Standard Details and as recommended by the Manufacturer. Attachment of the mailbox to the post will be the responsibility of the home or business owner.

606.07 Abraded Surfaces All galvanized surfaces of new guardrail and posts, which have been abraded so that the base metal is exposed, and the threaded portions of all fittings and fasteners and cut ends of bolts shall be cleaned and painted with two coats of approved rust resistant paint.

606.08 Method of Measurement Guardrail will be measured by the linear foot from center to center of end posts along the gradient of the rail except where end connections are made to masonry or steel structures, in which case measurement will be as shown on the plans. When connected to radius rail, measurement will be to the end of the last tangent beam.

Guardrail terminal, reflectorized flexible guardrail marker, terminal end, anchorage assembly, bridge transition, bridge connection, multiple mailbox post, and single post will be measured by each unit of the kind specified and installed.

Widened shoulder will be measured as a unit of grading within the limits shown on the plans.

Excavation in solid rock for placement of posts will be paid under force account unless otherwise indicated in the Bid Documents.

Reflectorized beam guardrail reflectors (“butterfly” type or linear delineation system panels) when identified by pay item, will be measured for payment by each.

606.09 Basis of Payment The accepted quantities of guardrail will be paid for at the contract unit price per linear foot for the type specified, complete in place. Reflectorized beam guardrail (“butterfly”-type) delineators will not be paid for directly but will be considered incidental to guardrail items. Reflectorized flexible guardrail marker, terminal end, anchorage assembly, bridge transition, bridge connection, multiple mailbox post, and single post will be paid for at the contract unit price each for the kind specified complete in place.

Guardrail terminals will be paid for at the contract price each, complete in place which price shall be full payment for furnishing and installing all components including the terminal section, posts, offset blocks, "w" beam, cable foundation posts, plates and for all incidentals necessary to complete the installation within the limits as shown on the Standard Details or the Manufacturer's installation instructions. Pay limits for a flared terminal will be 37.5 feet. Pay limits for a tangent terminal will be 50 feet. Each guardrail terminal will be clearly marked with the Manufacturer's name and model number to facilitate any future needed repair. Such payment shall also be full compensation for furnishing all material, excavating, backfilling holes, assembling, and all incidentals necessary to complete the work, except that for excavation for posts or anchorages in solid ledge rock, payment will be made under 109.7.5 – Force Account. Type III Retroreflective Adhesive Sheeting shall be applied to the approach buffer end sections and sized to substantially cover the end section. On all roadways, the ends shall be marked with alternating black and retroreflective yellow stripes. The stripes shall be 3 in wide and sloped down at an angle of 45 degrees toward the side on which traffic is to pass the end section. Guardrail terminals shall also include a set of installation drawings supplied to the Resident.

Anchorage to bridge end posts will be part of the bridge work. Connections thereto will be considered included in the unit bid price for guardrail.

Guardrail to be placed on a radius of curvature of 150 ft or less will be paid for under the designated radius pay item for the type guardrail being placed.

Widened shoulder will be paid for at the contract unit price each complete in place and will be full compensation for furnishing and placing, grading and compaction of aggregate subbase and any required fill material.

Adjust guardrail will be paid for at the contract unit price per linear foot and will be full compensation for adjusting to grade. Payment shall also include adjusting guardrail terminals where required.

Modify guardrail will be paid for at the contract unit price per linear foot and will be full compensation for furnishing and installing offset blocks, additional posts, and other specified modifications; removing, modifying, installing, and adjusting to grade existing posts and beams; removing plate washers and backup plates, and all incidentals necessary to complete the work. Payment shall also include removing and resetting guardrail terminals where required.

Remove and Reset guardrail will be paid for at the contract unit price per linear foot and will be full compensation for removing, transporting, storing, reassembling all parts, necessary cutting, furnishing new parts when necessary, reinstalling at the new location, and all other incidentals necessary to complete the work. Payment shall also include removing and resetting guardrail terminals when required.

Remove, Modify, and Reset guardrail will be paid for at the contract unit price per foot and will be full compensation for the requirements listed in Modify guardrail and Remove and Reset guardrail.

Bridge Connections will be paid for at the contract unit price each. Payment shall include, attaching the connection to the endpost including furnishing and placing concrete and reinforcing steel necessary to construct new endposts if required, furnishing and installing the terminal connector, and all miscellaneous hardware, labor, equipment, and incidentals necessary to complete the work.

Bridge Transitions will be paid for at the contract unit price each. Payment shall include furnishing and installing the thrie beam or “w”-beam terminal connector, doubled beam section, and transition section, where called for, posts, hardware, precast concrete transition curb, and any other necessary materials and labor, including the bridge connection as stated in the previous paragraph.

No payment will be made for guardrail removed, but not reset and all costs for such removal shall be considered incidental to the various contract pay items.

Reflectorized beam guardrail reflectors (“butterfly” type and the linear delineation panels) will not be paid for directly but will be considered incidental to all new guardrail items. The Contractor shall furnish and install either the “butterfly” type or linear delineation panels, at its discretion, for new guardrail items.

Reflectorized beam guardrail reflectors (either “butterfly” type or linear delineation system panels) will be paid for under the applicable pay items for installation in conjunction with Adjust, Modify, Remove and Reset, Remove Modify and Reset guardrail items. The accepted quantity of “butterfly” type or linear delineation system panels will be paid for at the contract unit price each for all work and materials furnished to install, complete in place, including all incidentals necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
606.1301 31" W-Beam Guardrail - Mid-Way Splice – Single Faced	Linear Foot
606.1302 31" W-Beam Guardrail - Mid-Way Splice – Double Faced	Linear Foot
606.1303 31" W-Beam Guardrail - Mid-Way Splice, 15' Radius and Less	Linear Foot
606.1304 31" W-Beam Guardrail - Mid-Way Splice, Over 15' Radius	Linear Foot
606.1305 31" W-Beam Guardrail - Mid-Way Splice Flared Terminal	Each
606.1306 31" W-Beam Guardrail - Mid-Way Splice Tangent Terminal	Each
606.1307 Bridge Transition (Asymmetrical) – Type IA	Each
606.1721 Bridge Transition - Type I	Each
606.1722 Bridge Transition - Type II	Each
606.1731 Bridge Connection - Type I	Each
606.1732 Bridge Connection - Type II	Each
606.178 Guardrail Beam	Linear Foot
606.25 Terminal Connector	Each
606.257 Terminal Connector - Thrie Beam	Each
606.259 Anchorage Assembly	Each
606.265 Terminal End-Single Rail - Galvanized Steel	Each
606.266 Terminal End-Single Rail - Corrosion Resistant Steel	Each
606.275 Terminal End-Double Rail - Galvanized Steel	Each
606.276 Terminal End-Double Rail - Corrosion Resistant Steel	Each
606.352 Reflectorized Beam Guardrail Delineators ("Butterfly" type)	Each
606.3521 Linear Delineation System Panel	Each
606.353 Reflectorized Flexible Guardrail Marker	Each
606.354 Remove and Reset Reflectorized Flexible Guardrail Marker	Each
606.356 Underdrain Delineator Post	Each
606.358 Guardrail, Modify	Linear Foot
606.362 Guardrail, Adjust	Linear Foot
606.365 Guardrail, Remove, Modify, and Reset	Linear Foot
606.366 Guardrail, Remove and Reset	Linear Foot
606.367 Replace Unusable Existing Guardrail Posts	Each
606.3671 Replace Unusable Offset Blocks	Each
606.47 Single Wood Post	Each
606.48 Single Galvanized Steel Post	Each
606.50 Single Steel Pipe Post	Each
606.51 Multiple Mailbox Support	Each
606.568 Guardrail, Modify - Double Rail	Linear Foot
606.63 Thrie Beam Rail Beam	Linear Foot
606.64 Guardrail Thrie Beam - Double Rail	Linear Foot
606.65 Guardrail Thrie Beam - Single Rail	Linear Foot
606.66 Terminal End Thrie Beam	Each
606.70 Transition Section - Thrie Beam	Each
606.71 Guardrail Thrie Beam - 15 ft radius and less	Linear Foot
606.72 Guardrail Thrie Beam - over 15 ft radius	Linear Foot

606.73	Guardrail Thrie Beam - Single Rail Bridge Mounted	Linear Foot
606.74	Guardrail - Single Rail Bridge Mounted	Linear Foot
606.753	Widen Shoulder for Low Volume Guardrail End	Each
606.754	Widen Shoulder for Flared Guardrail Terminal	Each
606.78	Low Volume Guardrail End	Each
606.80	Buried-in-Slope Guardrail End	Each

SECTION 608 SIDEWALKS

Section 608.022 Detectable Warning Materials Standard Revise this section by removing the last sentence of this section beginning with “Concrete...” and replacing it with “**Concrete shall meet the requirements of Section 608.021, Sidewalk Materials, of this specification or may be a prepackaged concrete mix from the Department’s Qualified Products List (QPL).**”

SECTION 609 CURB

Remove this section in its entirety and replace with the following:

609.01 Description Construct or reset curb, gutter, or combination curb and gutter, paved ditch, and paved flume. The types of curb are designated as follows:

- Type 1 - Stone curbing of quarried granite stone
- Type 2 – Concrete Curbing
- Type 3 - Bituminous curbing
- Type 5 - Stone edging of quarried granite stone

609.02 Materials Except as provided below, the materials used shall meet the requirements of the following Sections of Division 700 - Materials:

Portland Cement and Portland Pozzolan Cement	701.01
Water	701.02
Air Entraining Chemical Admixture	701.03
Fine Aggregate for Concrete	703.01
Coarse Aggregate for Concrete	703.02
Joint Mortar	705.02
Reinforcing Steel	709.01
Stone Curbing and Edging	712.04
Epoxy Resin	712.35
Hot Mix Asphalt Curbing	712.36
Structural Precast Concrete Units (Concrete Curb)	712.061

The Contractor shall submit a concrete mix design for the Portland Cement Concrete to the Resident, for the uses specified below or in accordance with the Contract Documents.

Circular curb, terminal sections and transition sections shall be in reasonably close conformity with the shape and dimensions shown on the Plans and to the applicable material requirements herein for the type of curb specified.

Dowels shall be reinforcing steel deformed bars.

Concrete for Slipform Concrete Curb shall meet the requirements below:

- a. Class A, with the exception that permeability requirements shall be waived.
- b. Entrained air content of Slipform Concrete Curb shall be 4.0% to 7.0%
- c. Concrete temperature, prior to discharge, shall not exceed 90 F.
- d. Proposed mix designs may contain polypropylene fibers.
- e. Partially discharged loads may be retempered with water provided the maximum water to cement ratio is not exceeded.

609.03 Vertical Stone Curb, Terminal Section and Transition Sections and Portland Cement Concrete Curb, Terminal Sections and Transition Sections

a. Installation The curb stone shall be set on a compacted foundation so that the front top arris line conforms to the lines and grades required. The foundation shall be prepared in advance of setting the stone by grading the proper elevation and shaping to conform as closely as possible to the shape of the bottom of the stone. The required spacing between stones shall be assured by the use of an approved spacing device to provide an open joint between stones of at least ¼ inch and no greater than ⅝ inch.

b. Backfilling All remaining spaces under the curb shall be filled with approved material and thoroughly hand tamped so the stones will have a firm uniform bearing on the foundation for the entire length and width. Any remaining excavated areas surrounding the curb shall be filled to the required grade with approved materials. This material shall be placed in layers not exceeding 8 inches in depth, loose measure and thoroughly tamped.

When backfill material infiltrates through the joints between the stones, small amounts of joint mortar or other approved material shall be placed in the back portion of the joint to prevent such infiltrating.

c. Protection The curb shall be protected and kept in good condition. All exposed surfaces smeared or discolored shall be cleaned and restored to a satisfactory condition or the curb stone removed and replaced.

d. Curb Inlets Curb placed adjacent to curb inlets shall be installed with steel dowels cemented into each stone with epoxy grout as shown in the Standard Details.

The epoxy grout shall be used in accordance with the manufacturer's instructions. The grout shall be forced into the hole, after which the dowel shall be coated with grout for one-half its length and inserted into the grout filled hole. The hole shall be completely filled with grout around the dowel. All tools and containers must be clean before using.

The Contractor may elect to substitute concrete to backfill Stone Curbing or Stone Edging at their option. If the concrete backfill option is elected, the Concrete Fill shall meet the requirements of 609.02. The Contractor shall submit a concrete design for the Portland Cement Concrete, with a minimum designated compressive strength of 3000 PSI meeting the requirements of Class S or Class Fill Concrete. The Contractor may elect to choose a Prepackaged Concrete Mix from the Departments Qualified Products list (QPL). Concrete backfill shall be completed in conformance with a Department supplied concrete backfill detail.

609.04 Bituminous Curb

a. Preparation of Base Before placing the curb, the foundation course shall be thoroughly cleaned of all foreign and objectionable material. String or chalk lines shall be positioned on the prepared base to provide guidelines. The foundation shall be uniformly painted with tack coat at a rate of 0.04 to 0.14 gal/yd².

b. Placing The curb shall be placed by an approved power operated extruding type machine using the shape mold called for. A tight bond shall be obtained between the base and the curb. The Resident may permit the placing of curbing by other than mechanical curb placing machines when short sections or sections with short radii are required. The resulting curbing shall conform in all respects to the curbing produced by the machine.

c. When required, the curb shall be painted and coated with glass beads in accordance with Section 627 - Pavement Marking. Curb designated to be painted shall not be sealed with bituminous sealing compound.

d. Acceptance Curb may be accepted or rejected based on appearance concerning texture, alignment, or both. All damaged curb shall be removed and replaced at the Contractor's expense.

e. Polyester fibers shall be uniformly incorporated into the dry mix at a rate of 0.25 percent of the total batch weight. Certification shall be provided from the supplier with each shipment meeting the following requirements:

Average Length	0.25 inches \pm 0.005
Average Diameter	0.0008 inches \pm 0.0001
Specific Gravity	1.32-1.40
Melting Temperature	480 °F Minimum

609.05 Slipform Concrete Curb

a. Preparation of Base Before placing the curb, the foundation course shall be thoroughly cleaned of all foreign and objectionable material. The Contractor shall not place Slipform Concrete Curb on a wet or frozen foundation. The foundation (HMA or concrete) may be in a Saturated Surface Dry condition, but no standing water shall be allowed. String or chalk lines shall be positioned on the prepared foundation to provide guidelines. Prior to placing the curb, the foundation shall be uniformly coated with an epoxy resin adhesive that meets the requirements of AASHTO M 235, Type I, II, III, IV or V and has been tested by AASHTO Product Evaluation & Audit Solutions. The Contractor shall submit the epoxy resin adhesive that they propose to utilize with the concrete mix design. The epoxy resin adhesive must be approved prior to placement and used in accordance with manufacturer's recommendations.

b. Placing Concrete shall be placed with an approved Slipform machine that will produce a finished product according to the design specified in the Plans. For cold weather slip forming, the outside temperature must be at least 36°F and rising. The curb shall be placed on a firm, uniform foundation, shall conform to the section profile specified in the Plans, and shall match the appropriate grade. Expansion joints shall be placed in the curb where it meets rigid structures such as but not limited to building foundations, catch basin headers or fire hydrants. Contraction joints will be placed at 10-foot intervals using sawing methods, which shall cut 1 to 3 inches into the concrete. Contraction joints shall be cut between 1 and 7 days after placement of the concrete. Joints shall be constructed perpendicular to the subgrade and match other joints in roadways, sidewalks, or other structures when applicable.

c. Curing and Sealing Proper curing shall be provided using either a combination curing/sealing compound spray that meets ASTM 1315 Type 1-Class A, or a curing compound spray that meets ASTM 309 Type 1-D – Class A. Curing may also be accomplished by the methods specified in Standard Specification Section 502.14, Curing Concrete.

If a combination curing/sealing compound spray is not used, a separate sealing compound from the MaineDOT Qualified Products List for a Type 1c sealer shall be applied after the concrete has cured.

d. Protection Slipform curb must be adequately protected after placement. The concrete shall be allowed to cure for at least 72 hours. During cold weather conditions, when temperatures drop below the required temperature of 36°F after placement, curbing shall be protected by concrete blankets or a combination of plastic sheeting and straw. After any placement of Slipform curb, regardless of weather conditions, the placed curb shall be adequately protected by traffic control devices as necessary.

e. Marking When required, the curb shall be painted and coated with glass beads in accordance with Section 627 - Pavement Marking. Curb designated to be painted shall not be sealed unless a combination curing/sealing compound is used.

f. Acceptance Curb shall be accepted or rejected based on finish, alignment, entrained air content, and compressive strength. Concrete Quality Control and Acceptance

shall be done in accordance with Standard Specification Section 502, Method C. All damaged curb shall be removed and replaced at the Contractor's expense.
609.06 Stone Edging The curb shall be installed, backfilled and protected in accordance with Section 609.03, except as follows:

- a. Slope The edging shall be set on a slope as shown on the Plans or as directed.
- b. Joints Joints shall be open and not greater than 1½ inch in width.

609.07 Stone Bridge Curb

a. Installation Each stone and the bed upon which it is to be placed shall be cleaned and thoroughly wetted with water before placing the mortar for bedding and setting the stone. The stone shall be set on a fresh bed of joint mortar and well bedded before the mortar has set so that the front top arris line conforms to the line and grade required. Whenever temporary supporting wedges or other devices are used in setting the stones, they shall be removed before the mortar in the bed has become set, and the holes left by them shall be filled with mortar. Concrete behind the stones shall not be placed until the stones have been in place at least two days. Bedding and pointing mortar for joints shall be cured as required under Section 502 - Structural Concrete.

b. Joints Vertical joints shall be ½ inch in width plus or minus ⅛ inch. Whenever possible, the face and top of the joint shall be pointed with joint mortar to a depth of 1½ inch, before the bedding mortar has set. Joints which cannot be so pointed, shall be prepared for pointing by raking them to a depth of 1½ inch before the mortar has set. Joints not pointed at the time the stone is laid shall be thoroughly wetted with clean water and filled with mortar. The mortar shall be well driven into the joint and finished with an approved pointing tool, flush with the pitch line of the stones.

609.08 Resetting Stone or Portland Cement Concrete Curb, Including Terminal Sections and Transitions

The curb shall be installed, backfilled and protected in accordance with Section 609.03, except as follows:

a. Removal of Curbing The Contractor shall carefully remove and store curb specified on the Plans or designated for resetting. Curb damaged or destroyed, because of the Contractor's operations or because of their failure to store and protect it in a manner that would prevent its loss or damage, shall be replaced with curbing of equal quality at the Contractor's expense.

b. Cutting and Fitting Cutting or fitting necessary in order to install the curbing at the locations directed shall be done by the Contractor.

609.09 Method of Measurement Curb, both new and reset, will be measured by the linear foot along the front face of the curb at the elevation of the finished pavement, complete in place and accepted. Curb inlets at catch basins, including doweling, will not be measured for payment but shall be considered included in the cost of the catch basin. New transition sections and terminal curb will be measured by the unit. Reset transition sections and terminal curb will be included in the measurement for resetting curb.

Concrete Slipform Curb and terminal ends will be measured by the linear foot along the front face of the curb at the elevation of the finished pavement, complete in place and accepted.

609.10 Basis of Payment The accepted quantities of curbing will be paid for at the contract unit price per linear foot for each kind and type of curbing as specified.

Payment for terminal curb shall include only that portion of the curbing modified for installation at ends of curb runs shown in the Standard Details. Curb adjacent to terminal ends shall be paid for at the contract unit price per linear foot for the type of curb installed.

Vertical Curb Type 1 is required to have a radius of 60 feet or less, will be paid for as Vertical Curb Type 1 - Circular.

Curb, Type 5 required to have a radius of 30 feet or less will be paid for as Curb Type 5 - Circular.

There will be no separate payment for concrete fill, mortar, reinforcing steel, anchors, tack coat, drilling for and grouting anchors, pointing and bedding of curbing, and for cutting and fitting, but these will be considered included in the work of the related curb.

Removal of existing curb and necessary excavation for installing new or reset curbing will not be paid for directly but shall be considered to be included in the appropriate new or reset curb pay item. Base and Subbase material will be paid for under Section 304 - Aggregate Base and Subbase Course. Backing up bituminous curb is incidental to the curb items. Loam, as directed, will be paid under 615 – Loam.

Payment will be made under:

	<u>Pay Item</u>	<u>Pay Unit</u>
609.11	Vertical Curb Type 1	Linear Foot
609.12	Vertical Curb Type 1 - Circular	Linear Foot
609.13	Vertical Bridge Curb Type 1	Linear Foot
609.131	Vertical Bridge Curb Type 1A	Linear Foot
609.132	Vertical Bridge Curb Type 1B	Linear Foot
609.142	Vertical Bridge Curb Type 1B - Circular	Linear Foot
609.15	Sloped Curb Type 1	Linear Foot
609.151	Sloped Curb Type 1 - Circular	Linear Foot
609.161	Concrete Slipform Curb – Vertical Type 2	Linear Foot
609.21	Concrete Slipform Curb Type 2	Linear Foot

609.219	Concrete Slipform Terminal End Type 2	Linear Foot
609.23	Terminal Curb Type 1	Each
609.234	Terminal Curb Type 1 - 4 foot	Each
609.237	Terminal Curb Type 1 - 7 foot	Each
609.2371	Terminal Curb Type 1 - 7 foot – Circular	Each
609.238	Terminal Curb Type 1 - 8 foot	Each
609.26	Curb Transition Section B Type 1	Each
609.31	Curb Type 3	Linear Foot
609.34	Curb Type 5	Linear Foot
609.35	Curb-Type 5 - Circular	Linear Foot
609.38	Reset Curb Type 1	Linear Foot
609.39	Reset Curb Type 2	Linear Foot
609.40	Reset Curb Type 5	Linear Foot

SECTION 610

STONE FILL, RIPRAP, STONE BLANKET, AND STONE DITCH PROTECTION

610.02 Materials Amend this subsection by adding the following to the end of the material list:
“Stone Ditch Protection 703.29”

SECTION 618

SEEDING

618.08 Mulching Revise this Section so that the third sentence reads: “Mulch for Seeding Method Number 1 shall only be cellulous fiber mulch Section 619.04 (b) or straw mulch Section 619.04 (a).”

SECTION 619

MULCH

619.03 General Amend this Section by adding the following sentence to the end: **“Straw mulch shall be used in all wetland areas.”**

SECTION 626

FOUNDATIONS, CONDUIT, AND JUNCTION BOXES FOR HIGHWAY SIGNING, LIGHTING, AND SIGNALS

Section 626.021 Miscellaneous Materials Revise this section by removing the fourth paragraph beginning with “ All Concrete for concrete encasement...” and replace it with **“All concrete for concrete encasement of conduit shall be Class S or Class Fill concrete in accordance with the applicable requirements of Section 502 – Structural Concrete, or a Prepackaged Concrete Mix from the Department’s Qualified Products List (QPL).”**

Section 626.031 Conduit Revise the fifth paragraph beginning with “After the trench has been...” by removing the last sentence beginning with “Where concrete encasement...” and replacing it with **“Where concrete encasement is required around the conduit, the concrete shall meet Class S, Class Fill in accordance with the applicable requirements of Section 502 – Structural Concrete, or a Prepackaged Concrete Mix from the Department’s Qualified Products List (QPL).”**

626.034 Concrete Foundations Revise this Section by changing ‘626.037’ to ‘**626.036**’ in the Second Paragraph which begins with “Foundations shall consist of cast-in-place...”.

Revise the 10th paragraph beginning with “Before placing concrete, the required elbows...” by removing “...in accordance with **Standard Specification 633.**”

626.036 Precast Foundations Revise the last sentence of paragraph one so that it reads: **“Construction of precast foundations shall conform to the Standard Details and all requirements of 712.061.”**

SECTION 627 **PAVEMENT MARKINGS**

627.02 Materials Amend this section by adding the following to the existing Specification:

“When pavement marking paint must be applied on pavement with an air temperature between 35 °F and 50 °F, a low temperature waterborne paint may be used upon the Department’s approval as noted below.

The Contractor shall submit the following information for Department review and approval at least 10 calendar days prior to application:

The manufacturer and product name of the low temperature waterborne paint

The manufacturer’s technical product data sheets

The product’s SDS sheets

All required and recommended application specifications for the product

The manufacturer’s requirements for temperature, surface preparation, paint thickness and the bead application shall be followed. No additional payment will be made for the use of low temperature waterborne paint. “

627.06 Application Revise this subsection by replacing the paragraph beginning with “ On other final pavement markings...” with the following:

“On other final pavement markings and on curb, where the paint is applied by hand painting or spraying, application shall be one uniform covering coat at least 16 mils thick. Before the paint has dried, the glass beads shall be applied by a pressure system that will force the glass beads onto the undried paint as uniformly as possible.

Painted lines and markings shall be applied in accordance with the manufacturer’s published recommendations. These recommendations will be supplied to the Resident prior to installation.”

Revise this subsection by replacing the paragraph beginning with “ If the final reflectivity values are less...” with the following:

The final reflectivity will be acceptable if 90 percent or more of the painted pavement lines and markings meet the specified minimum value. If less than 90 percent of the painted pavement lines and markings meet the specified minimum final reflectivity values, the Contractor shall repaint those areas not meeting required reflectivity at no cost to the Department.

If, after repainting, analysis of the final reflectivity values results in the need for a second repainting, the Contractor will submit in writing a plan of action to meet the reflectivity minimums prior to continuing any work. Once the plan has been reviewed and approved by the Department, the Contractor shall reapply at no cost to the Department.

SECTION 637 DUST CONTROL

Revise this section by removing it in its entirety.

SECTION 643 TRAFFIC SIGNALS

643.021 Materials Amend this subsection by adding the following at the end:

“MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:

Temporary Traffic Control Signals will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 4 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.”

643.023 Traffic Signal Structures Remove the third paragraph and replace it with the following:

“Traffic signal support structures shall be classified as Fatigue Category III if they are located on roads with a speed limit of 35 mph or less, Fatigue Category II if they are located on roads with a speed limit of greater than 35 mph, and Fatigue Category I if noted on the Contract Plans. Fatigue Importance Factors shall be as specified in Table 11.6-1 (Fatigue Importance Factors). Fatigue analyses are not required for span-wire (strain) pole traffic signal support structures with heights of 55 feet or less unless required by the current edition of AASHTO “LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals”.

643.09 Service Connection Revise this subsection by removing the paragraph that begins with “Traffic signal services shall have...”.

And by removing the paragraphs beginning with “ A service ground rod shall be installed...” and “A total of 4, 10’ service...” and replace them with **“A total of 4, 10’ service ground rods shall be installed and properly connected together on the outside of the cabinet foundation. One ground rod shall be located at each corner and shall be either flush or slightly below finished grade. The connection between the ground rod and the ground wire shall be an exothermic connection such as a Cadweld. The ground wire from the interconnected ground rods shall be routed through a conduit in the foundation and into the base of the cabinet”**.

SECTION 645 HIGHWAY SIGNING

Section 645.023 Sign Support Structures. Under letter “c.”, revise the fifth paragraph beginning with “In addition to the required details...” by removing the words **”and foundation”** from the 5th sentence.

Section 645.08 Method of Measurement. Revise the second paragraph beginning with “Bridge-type, cantilever and...” by removing the words **”including the foundation”** .

Section 645.09 Basis of Payment. Revise the third paragraph beginning with “The accepted bridge-type, cantilever and...” by removing the word **”foundation”** from the second sentence. Add the following sentence to the end of the paragraph **“Conduits, Junction Boxes, and Foundations will be paid for under Section 626.”**

SECTION 652 MAINTENANCE OF TRAFFIC

652.2.5 Portable Changeable Message Sign Revise the fifth paragraph so it reads:

“The control system shall include a display screen upon which messages can be reviewed before being displayed on the message sign. The control system shall be capable of maintaining memory when power is unavailable. Messages must be changeable with either a portable electronic device like a notebook computer or an on-board keypad. The controller shall have the capability to store a minimum of 200 user-defined and 200 pre-programmed messages. Controller and battery compartments shall be enclosed in lockable, weather-tight boxes. The cabinet shall be locked at all times that the Contractor is not actively changing the message. The Contractor shall change the password for the controller prior to stationing the PCMS and shall provide the password to the Resident. The password shall be unique per PCMS and secure and shall not be written anywhere in, on, around, or stored in the PCMS.”

Amend this Section by adding the following new subsection:

“652.2.6 Device Crashworthiness MaineDOT is transitioning to MASH2016 criteria for Work Zone Traffic Control Devices on the following schedule:

Category 1 (Cones, Drums, Tubular Markers, Flexible Delineators, and similar devices that have little chance if causing windshield penetration, tire damage, or other significant effect on the control or trajectory of a vehicle) – All Category 1 devices will be manufacturer self-certified as MASH2016 by January 1, 2025. Current Category 1 devices in useful serviceable condition that are not self-certified as MASH2016 compliant may be utilized through December 31, 2024.

Category 2 (Barricades, Portable Sign Supports, Category 1 devices with attachments, and similar devices that are not expected to produce significant vehicular velocity change but may be otherwise hazardous) – All Category 2 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2025. Current Category 2 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2024.

Category 3 (Portable Concrete Barrier, Portable Crash Cushions, Truck Mounted Attenuators, Category 2 devices weighing more than 100 pounds, and similar devices that are expected to produce significant vehicular velocity change or other harmful reactions) – All Category 3 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 3 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029. (See Standard Specification 526 for additional Portable Concrete Barrier information).

Category 4 (Trailer Mounted Devices: Arrow Boards, Temporary Traffic Control Signals, Area Lighting, Portable Changeable Message Sign, and other similar devices.) – All Category 4 devices will be crash tested and/or evaluated to MASH2016 criteria by January 1, 2030. Current Category 4 devices in useful serviceable condition that are successfully tested to NCHRP Report 350 or MASH2009 criteria may be utilized through December 31, 2029.”

652.3.3 Submittal of Traffic Control Plan Amend this section by adding:

“n. A security plan for any PCMS shall be included. The Contractor shall provide a plan for secure access to the PCMS and protection from unauthorized users. The plan shall have details on securing the cabinets via a lock and password from unauthorized users, password changing protocols, and where the access information will be kept so it can be used in the event of emergency. The Contractor shall not Identify or store passwords in the TCP.”

652.4 Flaggers Revise the first paragraph of this section so that it reads:

“The Contractor shall furnish flaggers as required by the TCP or as otherwise specified by the Resident. All flaggers must have successfully completed a flagger test approved by the Department and administered by a Department-approved Flagger-Certifier who is employing that flagger. All flaggers must carry an official certification card with them while flagging that has been issued by their employer.”

SECTION 681
PRECAST AGGREGATE-FILLED, CONCRETE BLOCK GRAVITY WALL

681.08 Basis of Payment Amend this section by adding the Item Number “**681.10**” in front of the item “Precast Aggregate-Filled Concrete Block Gravity Wall” at the end of the section.

SECTION 701
STRUCTURAL CONCRETE RELATED MATERIAL

701.01 Portland Cement and Portland Pozzolan Cement Amend the first sentence of Paragraph 3 by adding “**or Type 1L Portland Limestone cement**” so that it reads:

“A Type IP (MS) Portland-pozzolan cement (blended hydraulic cement with moderate sulfate resistance) or Type 1L Portland Limestone cement meeting the requirements of AASHTO M 240, may be used instead of Type II or where Type I Portland cement, meeting the requirements of AASHTO M 85, is allowed.”

SECTION 703
AGGREGATES

Add the following to Section 703 - Aggregates

703.01 Fine Aggregate for Concrete Fine aggregate for concrete shall consist of natural sand or, when approved by the Resident, other inert materials with similar characteristics or combinations thereof, having strong, durable particles. Fine aggregate from different sources of supply shall not be mixed or stored in the same pile nor used alternately in the same class of construction or mix without permission of the Resident.

All fine aggregate shall be free from injurious amounts of organic impurities. Should the fine aggregate, when subjected to the colorimetric test for organic impurities, AASHTO T 21, produce a color darker than the reference standard color solution (laboratory designation Plate III), the fine aggregate shall be rejected.

Fine aggregate shall have a sand equivalent value of not less than 75 when tested in accordance with AASHTO T 176.

Fine aggregate sources shall meet the Alkali Silica Reactivity (ASR) requirements of Section 703.0201.

The fineness modulus shall not be less than 2.26 or more than 3.14. If this value is exceeded, the fine aggregate will be rejected unless suitable adjustments are made in proportions of coarse and fine aggregate. The fineness modulus of fine aggregate shall be determined by adding the cumulative percentages of material by weight retained on the following sieves: Nos. 4, 8, 16, 30, 50, 100 and dividing by 100.

Fine aggregate, from an individual source when tested for absorption as specified in AASHTO T 84, shall show an absorption of not more than 2.3 percent.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
$\frac{3}{8}$ inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10
No. 200	0-5.0

703.02 Coarse Aggregate for Concrete Coarse aggregate for concrete shall consist of crushed stone or gravel having hard, strong, durable pieces, free from adherent coatings and of which the composite blend retained on the $\frac{3}{8}$ inch sieve shall contain no more than 15 percent, by weight of flat and elongated particles when performed in accordance with test method ASTM D 4791, Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate, using a dimensional ratio of 1:5.

The coarse aggregate from an individual source shall have an absorption no greater than 2.0 percent by weight determined in accordance with AASHTO T 85 modified for weight of sample.

The composite blend shall have a Micro-Deval value of 18.0 percent or less as determined by AASHTO T 327 or not exceed 40 percent loss as determined by AASHTO T 96.

Coarse aggregate sources shall meet the Alkali Silica Reactivity (ASR) requirements of Section 703.0201.

Coarse aggregate shall conform to the requirements of the following table for the size or sizes designated and shall be well graded between the limits specified.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves			
Grading	A	AA	S	LATEX
Aggregate Size	1 inch	$\frac{3}{4}$ inch	$1\frac{1}{2}$ inch	$\frac{1}{2}$ inch
2 inch			100	
$1\frac{1}{2}$ inch	100		95-100	
1 inch	95-100	100	-	
$\frac{3}{4}$ inch	-	90-100	35-70	100
$\frac{1}{2}$ inch	25-60	-	-	90-100
$\frac{3}{8}$ inch	-	20-55	10-30	40-70
No. 4	0-10	0-10	0-5	0-15
No. 8	0-5	0-5	-	0-5
No. 16	-	-	-	-
No. 50	-	-	-	-
No. 200	0 - 1.5	0 - 1.5	0 - 1.5	0 - 1.5

703.0201 Alkali Silica Reactive Aggregates All coarse and fine aggregates proposed for use in concrete shall be tested for Alkali Silica Reactivity (ASR) potential under AASHTO T 303 (ASTM C 1260), Accelerated Detection of Potentially Deleterious Expansion of Mortar Bars Due to Alkali-Silica Reaction, prior to being accepted for use. Acceptance will be based on testing performed by an accredited independent lab submitted to the Department. Aggregate submittals will be required on a 5-year cycle, unless the source or character of the aggregate in question has changed within 5 years from the last test date.

As per AASHTO T 303 (ASTM C 1260): Use of a particular coarse or fine aggregate will be allowed with no restrictions when the mortar bars made with this aggregate expand less than or equal to 0.10 percent at 30 days from casting. Use of a particular coarse or fine aggregate will be classified as potentially reactive when the mortar bars made with this aggregate expand greater than 0.10 percent at 30 days from casting. Use of this aggregate will only be allowed with the use of cement-pozzolan blends and/or chemical admixtures that result in mortar bar expansion of less than 0.10 percent at 30 days from casting as tested under ASTM C 1567.

Acceptable pozzolans and chemical admixtures that may be used when an aggregate is classified as potentially reactive include, but are not limited to the following:

- Class F Coal Fly Ash meeting the requirements of AASHTO M 295
- Ground Granulated Blast Furnace Slag (Grade 100 or 120) meeting the requirements of AASHTO M 302
- Densified Silica Fume meeting the requirements of AASHTO M 307
- Lithium-based admixtures
- Metakaolin

Pozzolans or chemical admixtures required to offset the effects of potentially reactive aggregates will be incorporated into the concrete at no additional cost to the Department.

703.05 Aggregate for Sand Leveling Aggregate for sand leveling shall be sand of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The aggregate shall meet the grading requirements of the following table.

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
3/8 inch	85-100
No. 200	0-5.0

703.06 Aggregate for Base and Subbase The following shall apply to Sections (a.) and (c.) below. The material shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro-Deval value exceeds 25.0, the Washington State Degradation DOT Test Method T113, Method of Test for Determination of Degradation Value (January 2009 version) shall be performed, except that the test shall be performed on the portion of the sample that passes the 1/2 inch sieve and is retained on the No. 10 sieve. If the material has a Washington Degradation value of less than 15, the material shall be rejected. The material used in Section (b.) below shall have a Micro-Deval value of 25.0 or less as determined by AASHTO T 327. If the Micro-Deval value exceeds 25.0 the material may be used if it does not exceed 25 percent loss on AASHTO T 96, Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

Recycled Asphalt Pavement (RAP) shall not be used for or blended with aggregate base or subbase.

- a. Aggregate for base, Type A and B shall be crushed ledge or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a 3 inch sieve shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Type A	Type B
1/2 inch	45-70	35-75
1/4 inch	30-55	25-60
No. 40	0-20	0-25
No. 200	0-6.0	0-6.0

At least 50 percent by weight of the material retained on the No. 4 sieve shall have at least one fractured face as tested by AASHTO T 335.

Type A aggregate for base shall only contain particles of rock that will pass the 2 inch square mesh sieve.

Type B aggregate for base shall only contain particles of rock that will pass the 4 inch square mesh sieve.

- b. Aggregate for base, Type C shall be crushed ledge or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The material shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves
	Type C
4 inches	100
3 inches	90-100
2 inches	75-100
1 inch	50-80
½ inch	30-60
No. 4	15-40
No. 200	0-6.0

At least 50 percent by weight of the material coarser than the No. 4 sieve shall have at least one fractured face as tested by AASHTO T 335.

- c. Aggregate for subbase shall be sand or gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a 3 inch sieve shall meet the grading requirements of the following table:

Sieve Designation	Percentage by Weight Passing Square Mesh Sieves	
	Type D	Type E
½ in	35-80	
¼ inch	25-65	25-100
No. 40	0-30	0-50
No. 200	0-7.0	0-7.0

Type D aggregate for subbase gravel may contain up to 50 percent by weight Recycled Concrete Aggregate (RCA). When RCA is used, the portion of the resulting blend of gravel and RCA retained on a ½” square mesh sieve shall contain a total of no more than 5 percent by weight of other recycled materials such as brick, concrete masonry block, or asphalt pavement as determined by visual inspection.

RCA shall be substantially free of wood, metal, plaster, and gypsum board as defined in Note 9 in Section 7.4 of AASHTO M 319. RCA shall also be free of all substances that fall under the category of solid waste or hazardous materials.

Aggregate for subbase shall not contain particles of rock which will not pass the 6 inch square mesh sieve.

703.08 Recycled Asphalt Pavement Recycled asphalt pavement shall consist of salvaged asphalt materials from milled pavements or production waste that has been processed before use to meet the requirements of the job mix formula. It shall be free of winter sand, granular fill, construction debris, or other materials not generally considered asphalt pavement.

703.081 RAP for Asphalt Pavement Recycled Asphalt Pavement (RAP) may be introduced into hot-mix asphalt pavement at percentages approved by the Department according to the MaineDOT Policies and Procedures for HMA Sampling and Testing.

If approved by the Department, the Contractor shall provide documentation stating the source, test results for average residual asphalt content, and stockpile gradations showing RAP materials have been sized to meet the maximum aggregate size requirements of each mix designation. The Department will obtain samples for verification and approval prior to its use.

The maximum allowable percent of RAP shall be determined by the asphalt content, the percent passing the 0.075 mm sieve, the ratio between the percent passing the 0.075 mm sieve and the asphalt content, and Coarse Micro-Deval loss values as tested by the Department.

The maximum percentage of RAP allowable shall be the lowest percentage as determined according to Table 4 below:

Classification	Maximum RAP Percentage Allowed	Asphalt content standard deviation	Percent passing 0.075 mm sieve standard deviation	Percent passing 0.075 mm sieve / asphalt content ratio	Residual aggregate M-D loss value
Class III	10%	≤ 1.0	N/A	≤ 4.0	≤ 18
Class II	20%	≤ 0.5	≤ 1.0	≤ 2.8	
Class I	30%	≤ 0.3	≤ 0.5	≤ 1.8	

Table 4: Maximum Percent RAP According to Test Results

The Department will monitor RAP asphalt content and gradation during production by testing samples from the stockpile at approximately 15,000 T intervals (in terms of mix production). The allowable variance limits (from the numerical average values used for mix designs) for this testing are determined based upon the maximum allowable RAP percentage and are shown below in Table 5.

Table 5: RAP Verification Limits

Classification	Asphalt content (compared to aim)	Percent passing 0.075 mm sieve (compared to aim)
Class III	± 1.5	± 2.0
Class II	± 1.0	± 1.5
Class I	± 0.5	± 0.7

For specification purposes, RAP will be categorized as follows:

Class III – A maximum of 10.0 percent of Class III RAP may be used in any base, intermediate base, surface, or shim mixture. A maximum of 20.0 percent of Class III RAP may be used in hand-placed mixes for item 403.209.

Class II – A maximum of 20.0 percent Class II RAP in any base, binder, surface, or shim course.

Class I – A maximum of 20.0 percent Class I RAP may be used in any base, intermediate base, surface, or shim mixture without requiring a change to the specified asphalt binder. A maximum of 30.0 percent Class I RAP may be used in in any base or intermediate base mixture provided that a PG 58-28 or PG 58-34 asphalt binder is used. A maximum of 30.0 percent Class I RAP may be used in any surface or shim mixture provided that PG 58-34 asphalt binder is used. Mixtures exceeding 20.0 percent Class I RAP must be evaluated and approved by the Department.

The Contractor may use up to two different RAP sources in any one mix design. The total RAP percentage of the mix shall not exceed the maximum allowed for the highest classification RAP source used (i.e. if a Class I & Class III used, total RAP must not exceed 30.0%). The blended RAP material must meet all the requirements of the classification for which the RAP is entered (i.e. 10% Class III with 20% Class I, blend must meet Class I criteria). The Department may take belt cuts of the blended RAP to verify the material meets these requirements. If the Contractor elects to use more than one RAP source in a design, the Contractor shall provide an acceptable point of sampling blended RAP material from the feed belt.

In the event that RAP source or properties change, the Contractor shall notify the Department of the change and submit new documentation stating the new source or properties a minimum of 72 hours prior to the change to allow for obtaining new samples and approval.

SECTION 709 REINFORCING STEEL AND WELDED STEEL WIRE FABRIC

709.01 Reinforcing Steel Remove the second paragraph of Section 709.01 of the standard specification beginning with “Low-Carbon, Chromium,...” and replace with the following:

“ Low-carbon, chromium, reinforcing steel shall be deformed bars conforming to the requirements of ASTM A1035. Bars shall be Grade 100 and alloy Type CS unless otherwise specified on the Plans. “

SECTION 710 FENCE AND GUARDRAIL

710.06 Fence Posts and Braces Revise the first Paragraph so that it reads:

“Wood posts shall be of cedar, white oak, or tamarack or other AWPAs approved species, of the diameter or section and length shown on the plans.”

Remove the fourth paragraph which starts “ That portion of wood posts...”.

Revise the paragraph beginning with “Braces shall be of spruce, eastern hemlock ... so that it now reads:

“Braces shall be of spruce, eastern hemlock, Norway pine, pitch pine, or tamarack timbers or other AWPAs approved species, or spruce, cedar, tamarack or other AWPAs approved species round posts of sufficient length to make a diagonal brace between adjacent posts. All wood posts and braces shall be pressure-treated in accordance with AASHTO M 133 and AWPAs U1, UC4A Commodity Specification B: Posts. “

710.07 Guardrail Posts Revise this section so that the first sentence of section a. reads:

“a. Wood posts shall be of Norway pine, southern yellow pine, pitch pine, Douglas fir, red pine, white pine, or eastern hemlock or other AWPAs approved species.”

Revise the next paragraph so that it reads:

Wood posts and offset brackets shall be preservative treated in accordance with the requirements of AASHTO M 133 and AWPAs U1, UC4A Commodity Specification B: Posts.

710.08 Guardrail Hardware Revise this subsection by replacing “AASHTO M 298” with “ASTM B695”

SECTION 711 MISCELLANEOUS BRIDGE MATERIAL

711.06 Stud Shear Connector Anchors and Fasteners Amend this section by deleting it in its entirety and replacing it with:

“Shear connectors shall meet the dimensional tolerances of Figure 9.1 of the ANSI/AASHTO/AWS D1.5 Bridge Welding Code (D1.5 Code). Shear connectors, anchors and fasteners shall meet the material requirements of Section 9 of the D1.5 Code. Shear connectors shall meet the mechanical property requirements of Table 9.1, Type B of the D1.5 Code. Anchors and fasteners shall meet the mechanical property requirements of Table 9.1 of the D1.5 Code, Type A.”

SECTION 712 MISCELLANEOUS HIGHWAY MATERIAL

712.061 Structural Precast Units Amend this section by adding the following sentence to the end of the first paragraph of the Construction subsection:

“Facilities certified by NPCA or PCI shall provide to the Fabrication Engineer a copy of their annual audit to include deficiency reports and corrective actions.”

Revise this section by changing the letter “b” of ASTM C1611 of the Concrete Testing subsection so that it reads:

“b. Air content shall be 5.0% to 8.0%.”

SECTION 713 STRUCTURAL STEEL AND RELATED MATERIAL

Section 713.02 High Strength Bolts

Revise the second sentence of this subsection so that it reads **“Nuts shall meet the requirement of ASTM A563”**. Revise the third sentence of this subsection so that it reads **“Circular and beveled washers shall conform to the requirement of ASTM F436”**.

SECTION 718 TRAFFIC SIGNALS MATERIAL

718.03 Signal Mounting Amend the paragraph beginning with “All trunions, brackets and...” by adding **“For polycarbonate signal heads with more than 3 sections or requiring mounting extensions greater than 12 inches in length, reinforcing plates shall be used to reinforce the housings at the point of attachment.”** to the end of the paragraph.

718.08 Controller Cabinet Revise this subsection by replacing the paragraph beginning with “The cabinet shall be supplied with LED light panels...” on or about page 7-66 with **“The cabinet shall be supplied with white LED light panels which shall automatically illuminate via a door open switch whenever one of the four main cabinet doors are opened for the ground mount cabinet or two main doors for the side of pole cabinet. The ground mounted cabinet shall contain four LED light panels per side totaling eight panels for the cabinet; one panel each at the top and bottom portion of the front side and back side on the Control side and Power/Auxiliary side of the cabinet. Each light panel shall produce a minimum of 250 lumens for a total minimum lumen output of 2000 lumens with all eight panels illuminated. The minimum output per side would be 1000 lumens. The LED panels shall be protected by a clear shatterproof shield. The side of pole mounted cabinet shall contain four light panels; one at the top of the rack assembly and one at the bottom rack assembly on each side of the cabinet.**

A second door open status switch per door shall activate a controller input to log a report event that one of the doors was opened. All door open status switches shall be connected to the same controller input. For the ground mount cabinet, there shall be two switches on each of the four main doors. For the side-of-pole mount cabinet, there shall be two switches on each of the two main doors.”

Revise this subsection by replacing the paragraph beginning with “The cabinet shall be supplied with a generator panel ...” on or about page 7-68 with:

“The cabinet shall be supplied with a generator panel. The generator panel shall consist of a manual transfer switch and a twist-lock connector for generator hookup. The transfer switch knob and twist-lock connector shall be located inside a stainless steel enclosure with a separate lockable door accessed with a Corbin #2 key. The unit shall be mounted on the left, exterior of the control side wall of the ground mount cabinet a minimum of 36” above the surrounding grade and on the lower left side of the pole mounted cabinet. The generator transfer switch shall be a Reliance C30A1N Signa Series or approved equal. “

Revise this subsection by removing the following from the paragraph beginning with “The ground mounted cabinet shall be supplied and installed with an electric service meter socket trim and electrical service disconnect switch ...” on or about page 7-69: **“(removed: thus preventing that space from being used either by equipment supplied as part of the project, or future equipment that would be installed in the rack system. Joe indicated that he would add this language to the detail so it is covered.)”**.

Revise this subsection by replacing the following in the paragraph beginning with “The Contractor shall reconfigure the default user name...” on or around page 7-70; “MaineDOT IT” with **“MaineDOT Traffic Division”**.

In the paragraph beginning with “Tests shall be conducted by the contractor...” on or around page 7-73, amend this subsection by removing **“in the state of Maine and”** after “The facility shall be”.

Amend this Section by adding the following subsection:

718.13 Field Monitoring Unit (FMU) This item of work shall conform to this specification. This item shall consist of furnishing and installing a Field Monitoring Unit (FMU) and software, as well as all needed accessories required for a full and complete installation, including but not limited to power adapters, Ethernet cables, and interface cables, as described herein.

Where applicable, communications from MaineDOT's cloud-based Central Management System (CMS) to the on-street traffic signal controllers shall be made through fiber optic interconnect cable connected back to existing internet connections and/or the Field Monitoring Unit (FMU). The Contractor shall furnish and install all materials necessary for a complete and operational fiber optic interconnection to all project intersections as shown on the plans. All connections to the CMS cloud-based system shall be via a secure VPN network.

The FMU shall be the only remote connection device used by isolated intersections to connect to the cloud-based system. All connections shall be encrypted VPN tunnels. The Contractor shall coordinate all configuration settings with MaineDOT IT and the Engineer.

The FMU central web based interface shall be a separate element from the CMS.

MATERIALS: The materials for this work shall conform to the following requirements:

1. The work under this item specifies the requirements for the FMU. The FMU shall operate independent of the brand/type of intersection controller deployed in the ATC traffic cabinet.
2. The FMU shall conform to the following requirements:
 - 2.1 The FMU shall function correctly between -34 degrees C and +74 degrees C.
 - 2.2 The FMU shall be provided with appropriately rated connectors that allows the FMU to be exchanged by unplugging connectors, without tools.
 - 2.3 The FMU shall monitor and log all ATC Controller and ATC cabinet faults and or alarms.
 - 2.4 The FMU shall be wired directly to the ATC cabinet.
 - 2.5 The FMU shall have an internal cellular modem running at 4G LTE.
 - 2.5.1 The Cellular modem shall be designed to be replaced / upgraded to 5G service when available.
 - 2.6 The FMU shall incorporate an integrated GPS and cell modem.
 - 2.7 The configuration of the FMU shall be accomplished by accessing the internal web server with a browser. It shall be possible to configure the FMU without any special software.

- 2.8 The FMU shall be powered via a standard 120V input power.
- 2.9 The FMU shall allow for the routing of the controller configuration packets to and from the controller (either by Ethernet or serial communications) for any type of controller utilized by the MaineDOT. In this way it shall be possible to configure the controller and utilize the controller specific software to interrogate the controller, and the FMU shall provide the communications pipe which allows this to be accomplished.
- 2.10 The FMU shall, within the size limitations above, include a battery and battery charging/monitoring circuit, to allow the FMU to function correctly even when all power to the intersection has failed. The battery shall continue to power the FMU for a minimum of 5 hours after all power has failed to the intersection.
- 2.11 The FMU shall incorporate an integrated GPS which will allow the FMU to geo-locate itself on the FMU management software map, without configuration.
- 2.12 The FMU shall operate without requiring a static IP address. The only configuration required at the FMU is to enter the URL of where the FMU management software is hosted.
- 2.13 In the event that the cell service is interrupted or is not available, the FMU shall store any events that occur in internal memory and forward these events automatically to the FMU management software when the cell service is restored. In this way, a complete record of events at the device can be maintained even if cell service is interrupted for a period. The system will store 5000 events.
- 2.14 The FMU shall utilize HTTP and HTTPS protocols, and XML data structures, for communication with the FMU management software. In this way the data will be open for future expansion and competition. The use of secret proprietary protocols is not permitted.
- 2.15 The FMU shall include Ethernet communications via an Ethernet Port with RJ45 connector.
- 2.16 The FMU shall include weather proof antennas.

3. Map Display FMU Management Software

- 3.1 The FMU shall include a scrollable, zoomable map display, with the intersections and other monitored devices shown as representative icons on the map. The map shall include the ability to see the intersections using Google Streetview.
- 3.2 The alarm status of the intersection shall be clearly indicated on the icon on the map, so that the user can see at a glance which intersections are in alarm.

- 3.3 The map display shall also include a list of intersections, with the number and priority of alarms indicated on the list. Intersections in high priority alarm shall be moved to the top of the list, followed by medium priority, low priority and then finally by intersections not in alarm.
- 3.4 The icons shall change to be able to clearly indicate if an intersection is offline.
- 3.5 Clicking on the icon on the map shall expose a box with the current parameters of the intersection shown.
- 3.6 The default map display position and zoom shall be configurable by user, so that the user's view will default to show the intersections that the user is responsible for managing.
- 3.7 The map view shall have the ability to show Google traffic overlays on the map.

4. Intersection Detail Display FMU Management Software

- 4.1 It shall be possible to drill down, either from the map icon or from the list, to a device level detail for the intersection, which as a minimum shall display the following parameters:
 - 4.1.1 The alarm status, with priority indicated, and a text description of the alarm (if an alarm is present for this device).
 - 4.1.2 The time since the last communication with the device
 - 4.1.3 The following parameters (real time now values, minimum for the day values, maximum for the day values, and average for the day values)
 - 4.1.3.1 The AC mains voltage (value)
 - 4.1.3.2 The battery back-up voltage (value)
 - 4.1.3.3 The cabinet temperature (value)
 - 4.1.3.4 The cabinet humidity (value)
 - 4.1.3.5 The presence of AC power (OK or Fail)
 - 4.1.3.6 The flashing status of the intersection (OK or Flashing)
 - 4.1.3.7 Stop Time status (OK or Stop Time Active)
 - 4.1.3.8 The cabinet door status (Open or Closed)
 - 4.1.3.9 The intersection fan status (Fan On or Fan off)

4.1.4 It shall be possible to view graphs of each of the value parameters in graphical form, over the recent two-week period. This includes real time graphs of:

4.1.4.1 The AC mains voltage

4.1.4.2 The battery back-up voltage

4.1.4.3 The cabinet temperature

4.1.4.4 The cabinet humidity

5. Diagnostics and Log Display FMU Management Software

5.1 From the device level detail within the FMU management software, it shall be possible to drill down to get the raw data; the error logs; and the communications logs to allow a technician to fault-find problems.

5.2 It shall be possible to filter the logs by Device; by Device Type and/or by Group as well as between dates.

5.3 It shall be possible to print these selected logs to a local printer or a PDF file.

5.4 It shall be possible to export these logs to Excel on the local computer for further analysis.

6. Alarms FMU Management Software

6.1 The FMU management software shall have a comprehensive alarm generation capability

6.2 It shall be possible to configure alarms to be generated on any parameter becoming out of tolerance, including analog values, digital values and enumerated values.

6.3 Alarms shall be configurable to be of Low, High or Critical Priority.

6.4 The alarm priority shall be displayed throughout the FMU management software, on all displays, using color codes such as red-critical; yellow – high; and amber-low to indicate the priority of the alarm.

6.5 The current active alarms shall be accessible for view via an expandable window, to see which alarms are active and when the alarm occurred. The highest priority alarms shall rise to the top of the list.

7. Alerts FMU Management Software

7.1 The FMU management software shall have comprehensive alerting capability, to enable the response personnel to be notified when an abnormal situation has occurred.

- 7.2 It shall be possible to configure alerts to one or more personnel for each alarm. This will cause, as selected, an SMS and/or an email to be sent to the person when an alarm occurs.
- 7.3 The alert shall be configurable to optionally send via email and/or via SMS a message when an alarm clears.
- 7.4 The intention is that the FMU management software provides the alerts to the user in near real time. The SMS and email shall be issued within 30 seconds of the occurrence of event which results in an alert being issued.

8. Hosting and Connectivity and Service FMU / FMU Management Software

- 8.1 The contractor shall supply the FMU with the FMU manufacturers 10 year options for Connectivity and Service, as part of the purchase price. The Connectivity and Service agreement shall include at a minimum:

- 8.1.1 Cellular Connectivity
- 8.1.2 No cellular overage charges
- 8.1.3 Extended warranty on the hardware for the period of the Connectivity and Service Agreement
- 8.1.4 Over-the-air software updates
- 8.1.5 Over-the-air security updates
- 8.1.6 Future Connected Vehicles Service

SECTION 720 STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS

720.12 Wood Sign Posts Revise the first sentence so that it reads:

Wood sign posts shall be rectangular, straight and sound timber, cut from live growing native spruce, red pine, hemlock, cedar trees or other AWPAs approved species, free from loose knots or other structurally weakening defects of importance, such as shake or holes or heart rot.

Revise the third paragraph that starts with “When pressure treated...” so that it reads:

All sign posts shall be pressure-treated in accordance with AASHTO M 133 and AWPAs Standard U1, UC4A, Commodity Specification A: Sawn Products.

The United States Department of Transportation (USDOT)

Standard Title VI/Non-Discrimination Assurances

DOT Order No. 1050.2A

The **Maine Department of Transportation** (herein referred to as the "Recipient"), **HEREBY AGREES THAT**, as a condition to receiving any Federal financial assistance from the U.S. Department of Transportation (DOT), through Federal Highway Administration (herein referred to as "FHWA" is subject to and will comply with the following:

Statutory/Regulatory Authorities

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin);
- 49 C.F.R. Part 21 (entitled *Non-discrimination In Federally-Assisted Programs Of The Department Of Transportation-Effectuation Of Title VI Of The Civil Rights Act Of 1964*);
- 28 C.F.R. section 50.3 (U.S. Department of Justice Guidelines for Enforcement of Title VI of the Civil Rights Act of 1964);

The preceding statutory and regulatory cites hereinafter are referred to as the "Acts" and "Regulations," respectively.

General Assurances

In accordance with the Acts, the Regulations, and other pertinent directives, circulars, policy, memoranda, and/or guidance, the Recipient hereby gives assurance that it will promptly take any measures necessary to ensure that:

"No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity, for which the Recipient receives Federal financial assistance from DOT, including the FHWA.

The Civil Rights Restoration Act of 1987 clarified the original intent of Congress, with respect to Title VI and other Non-discrimination requirements (The Age Discrimination Act of 1975, and Section 504 of the Rehabilitation Act of 1973), by restoring the broad, institutional-wide scope and coverage of these non- discrimination statutes and requirements to include all programs and activities of the Recipient, so long as any portion of the program is Federally assisted.

Specific Assurances

More specifically, and without limiting the above general Assurance, the Recipient agrees with and gives the following Assurances with respect to its Federally assisted **FHWA Program**.

1. The Recipient agrees that each "activity," "facility," or "program," as defined in §§ 21.23(b) and 21.2(e) of 49 C.F.R. § 21 will be (with regard to an "activity") facilitated, or will be (with regard to a "facility") operated, or will be (with regard to a "program") conducted in compliance with all requirements imposed by, or pursuant to the Acts and the Regulations.
2. The Recipient will insert the following notification in all solicitations for bids, Requests For Proposals for work, or material subject to the Acts and the Regulations made in connection with all **FHWA Programs** and, in adapted form, in all proposals for negotiated agreements regardless of funding source:

*"The **Maine Department of Transportation**, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award."*

3. The Recipient will insert the clauses of Appendix A and E of this Assurance in every contract or agreement subject to the Acts and the Regulations.
4. The Recipient will insert the clauses of Appendix B of this Assurance, as a covenant running with the land, in any deed from the United States effecting or recording a transfer of real property, structures, use, or improvements thereon or interest therein to a Recipient.
5. That where the Recipient receives Federal financial assistance to construct a facility, or part of a facility, the Assurance will extend to the entire facility and facilities operated in connection therewith.
6. That where the Recipient receives Federal financial assistance in the form, or for the acquisition of real property or an interest in real property, the Assurance will extend to rights to space on, over, or under such property.
7. That the Recipient will include the clauses set forth in Appendix C and Appendix D of this Assurance, as a covenant running with the land, in any future deeds,

leases, licenses, permits, or similar instruments entered into by the Recipient with other parties:

- a. for the subsequent transfer of real property acquired or improved under the applicable activity, project, or program; and
 - b. for the construction or use of, or access to, space on, over, or under real property acquired or improved under the applicable activity, project, or program.
8. That this Assurance obligates the Recipient for the period during which Federal financial assistance is extended to the program, except where the Federal financial assistance is to provide, or is in the form of, personal property, or real property, or interest therein, or structures or improvements thereon, in which case the Assurance obligates the Recipient, or any transferee for the longer of the following periods:
 - A. the period during which the property is used for a purpose for which the Federal financial assistance is extended, or for another purpose involving the provision of similar services or benefits; or
 - b. the period during which the Recipient retains ownership or possession of the property.
9. The Recipient will provide for such methods of administration for the program as are found by the Secretary of Transportation or the official to whom he/she delegates specific authority to give reasonable guarantee that it, other recipients, sub-recipients, sub-grantees, contractors, subcontractors, consultants, transferees, successors in interest, and other participants of Federal financial assistance under such program will comply with all requirements imposed or pursuant to the Acts, the Regulations, and this Assurance.
10. The Recipient agrees that the United States has a right to seek judicial enforcement with regard to any matter arising under the Acts, the Regulations, and this Assurance.

By signing this ASSURANCE, **Maine Department of Transportation** also agrees to comply (and require any sub-recipients, sub-grantees, contractors, successors, transferees, and/or assignees to comply) with all applicable provisions governing the **FHWA's** access to records, accounts, documents, information, facilities, and staff. You also recognize that you must comply with any program or compliance reviews, and/or complaint investigations conducted by the **FHWA**. You must keep records, reports, and submit the material for review upon request to **FHWA** or its designee in a timely, complete, and accurate way. Additionally, you must comply with all other reporting, data collection, and evaluation requirements, as prescribed by law or detailed in program guidance.

Maine Department of Transportation gives this ASSURANCE in consideration of and for obtaining any Federal grants, loans, contracts, agreements, property, and/or discounts, or other Federal-aid and Federal financial assistance extended after the date hereof to the recipients by the U.S. Department of Transportation under the **FHWA Programs**. This ASSURANCE is binding on the State of Maine, other recipients, sub-recipients, sub-grantees, contractors, subcontractors and their subcontractors, transferees, successors in interest, and any other participants in the **FHWA Programs**. The person(s) signing below is authorized to sign this ASSURANCE on behalf of the Recipient.

Maine Department of Transportation
Bruce Van Note, Commissioner
(Name of Recipient)

By: 
(Signature of Authorized Official)

Dated: 8/30/24

APPENDIX A

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, **Federal Highway Administration (FHWA)**, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the **FHWA** to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the **FHWA** as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Non- discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the **FHWA** may determine to be appropriate, including, but not limited to:

- a. withholding payments to the contractor under the contract until the contractor complies; and/or
 - b. cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

APPENDIX B

CLAUSES FOR DEEDS TRANSFERRING UNITED STATES PROPERTY

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of Assurance 4:

NOW, THEREFORE, the U.S. Department of Transportation as authorized by law and upon the condition that the **Maine Department of Transportation** will accept title to the lands and maintain the project constructed thereon in accordance with all requirements imposed by Title 49, Code of Federal Regulations, Department of Transportation, subtitle A, Office of the Secretary, part 21, Non-discrimination in Federally-assisted Programs of the Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), the Regulations for the Administration of **Federal Highway Administration (FHWA) Program**, and the policies and procedures prescribed by the **FHWA** of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the **Maine Department of Transportation** all the right, title and interest of the U.S. Department of Transportation in and to said lands described in Exhibit A attached hereto and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto **Maine Department of Transportation** and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the **Maine Department of Transportation**, its successors and assigns.

The **Maine Department of Transportation**, in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the **Maine Department of Transportation** will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended[, and (3) that in the event of breach of any of the above-mentioned non-discrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation

and its assigns as such interest existed prior to this instruction].*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)

APPENDIX C

CLAUSES FOR TRANSFER OF REAL PROPERTY ACQUIRED OR IMPROVED UNDER THE ACTIVITY, FACILITY, OR PROGRAM

The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the **Maine Department of Transportation** pursuant to the provisions of Assurance 7(a):

- A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:
 - 1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Acts and Regulations (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.
- B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Non-discrimination covenants, **Maine Department of Transportation** will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.*
- C. With respect to a deed, in the event of breach of any of the above Non-discrimination covenants, the **Maine Department of Transportation** will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the **Maine Department of Transportation** and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX D

CLAUSES FOR CONSTRUCTION/USE/ACCESS TO REAL PROPERTY ACQUIRED UNDER THE ACTIVITY, FACILITY OR PROGRAM

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by **Maine Department of Transportation** pursuant to the provisions of Assurance 7(b):

- A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.
- B. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above Non- discrimination covenants, **Maine Department of Transportation** will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued.*
- C. With respect to deeds, in the event of breach of any of the above Non-discrimination covenants, **Maine Department of Transportation** will there upon revert to and vest in and become the absolute property of **Maine Department of Transportation** and its assigns.*

(*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

APPENDIX E

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq.*), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure

compliance with Title VI, you must take reasonable steps to
-ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);

- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).