

Control	0912-73-222
Project	F 2025(218)
Highway	VA
County	GALVESTON

## ADDENDUM ACKNOWLEDGMENT

**Each bidder is required to acknowledge receipt of an addendum issued for a specific project. This page is provided for the purpose of acknowledging an addendum.**

FAILURE TO ACKNOWLEDGE RECEIPT OF AN ADDENDUM WILL RESULT IN THE BID NOT BEING READ.

In order to properly acknowledge an addendum place a mark in the box next to the respective addendum.

ADDENDUM NO. 1	<input type="checkbox"/>
ADDENDUM NO. 2	<input type="checkbox"/>
ADDENDUM NO. 3	<input type="checkbox"/>
ADDENDUM NO. 4	<input type="checkbox"/>
ADDENDUM NO. 5	<input type="checkbox"/>

In addition, the bidder by affixing their signature to the signature page of the proposal is acknowledging that they have taken the addendum(s) into consideration when preparing their bid and that the information contained in the addendum will be included in the contract, if awarded by the Commission or other designees.

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# PROPOSAL TO THE TEXAS TRANSPORTATION COMMISSION

## 2024 SPECIFICATIONS

### WORK CONSISTING OF FERRY OPERATION PROJECTS GALVESTON COUNTY, TEXAS

The quantities in the proposal are approximate. The quantities of work and materials may be increased or decreased as considered necessary to complete the work as planned and contemplated.

This project is to be completed in 900 working days and will be accepted when fully completed and finished to the satisfaction of the Executive Director or designee.

Provide a proposal guaranty in the form of a Cashier's Check, Teller's Check (including an Official Check) or Bank Money Order on a State or National Bank or Savings and Loan Association, or State or Federally chartered Credit Union made payable to the Texas Transportation Commission in the following amount:

ONE HUNDRED THOUSAND (Dollars) ( \$100,000 )

A bid bond may be used as the required proposal guaranty. The bond form may be detached from the proposal for completion. The proposal may not be disassembled to remove the bond form. The bond must be in accordance with Item 2 of the specifications.

Any addenda issued amending this proposal and/or the plans that have been acknowledged by the bidder, become part of this proposal.

By signing the proposal the bidder certifies:

1. the only persons or parties interested in this proposal are those named and the bidder has not directly or indirectly participated in collusion, entered into an agreement or otherwise taken any action in restraint of free competitive bidding in connection with the above captioned project.
2. in the event of the award of a contract, the organization represented will secure bonds for the full amount of the contract.
3. the signatory represents and warrants that they are an authorized signatory for the organization for which the bid is submitted and they have full and complete authority to submit this bid on behalf of their firm.
4. that the certifications and representations contained in the proposal are true and accurate and the bidder intends the proposal to be taken as a genuine government record.

• **Signed:** \*\*

(1) \_\_\_\_\_ (2) \_\_\_\_\_ (3) \_\_\_\_\_

**Print Name:**

(1) \_\_\_\_\_ (2) \_\_\_\_\_ (3) \_\_\_\_\_

**Title:**

(1) \_\_\_\_\_ (2) \_\_\_\_\_ (3) \_\_\_\_\_

**Company:**

(1) \_\_\_\_\_ (2) \_\_\_\_\_ (3) \_\_\_\_\_

- Signatures to comply with Item 2 of the specifications.

\*\*Note: Complete (1) for single venture, through (2) for joint venture and through (3) for triple venture.

\* **When the working days field contains an asterisk (\*) refer to the Special Provisions and General Notes.**

## **NOTICE TO CONTRACTORS**

**ANY CONTRACTORS INTENDING TO BID ON ANY WORK TO BE AWARDED BY THIS DEPARTMENT MUST SUBMIT A SATISFACTORY “AUDITED FINANCIAL STATEMENT” AND “EXPERIENCE QUESTIONNAIRE” AT LEAST TEN DAYS PRIOR TO THE LETTING DATE.**

**UNIT PRICES MUST BE SUBMITTED IN ACCORDANCE WITH ITEM 2 OF THE STANDARD SPECIFICATIONS OR SPECIAL PROVISION TO ITEM 2 FOR EACH ITEM LISTED IN THIS PROPOSAL.**

# TEXAS DEPARTMENT OF TRANSPORTATION

## BID BOND

KNOW ALL PERSONS BY THESE PRESENTS,

That we, (Contractor Name) \_\_\_\_\_  
\_\_\_\_\_

Hereinafter called the Principal, and (Surety Name) \_\_\_\_\_  
\_\_\_\_\_

a corporation or firm duly authorized to transact surety business in the State of Texas, hereinafter called the Surety, are held and firmly bound unto the Texas Department of Transportation, hereinafter called the Oblige, in the sum of not less than two percent (2%) of the department's engineer's estimate, rounded to the nearest one thousand dollars, not to exceed one hundred thousand dollars (\$100,000) as a proposal guaranty (amount displayed on the cover of the proposal), the payment of which sum will and truly be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the principal has submitted a bid for the following project identified as:

<b>Control</b>	<b>0912-73-222</b>
<b>Project</b>	<b>F 2025(218)</b>
<b>Highway</b>	<b>VA</b>
<b>County</b>	<b>GALVESTON</b>

NOW, THEREFORE, if the Oblige shall award the Contract to the Principal and the Principal shall enter into the Contract in writing with the Oblige in accordance with the terms of such bid, then this bond shall be null and void. If in the event of failure of the Principal to execute such Contract in accordance with the terms of such bid, this bond shall become the property of the Oblige, without recourse of the Principal and/or Surety, not as a penalty but as liquidated damages.

Signed this \_\_\_\_\_ Day of \_\_\_\_\_ 20\_\_\_\_\_

By: \_\_\_\_\_  
(Contractor/Principal Name)

\_\_\_\_\_  
(Signature and Title of Authorized Signatory for Contractor/Principal)

\*By: \_\_\_\_\_  
(Surety Name)

\_\_\_\_\_  
(Signature of Attorney-in-Fact)

Impressed  
Surety Seal  
Only

\*Attach Power of attorney (Surety) for Attorney-in-Fact

**This form may be removed from the proposal.**

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# BIDDER'S CHECK RETURN

## IMPORTANT

The space provided for the return address must be completed to facilitate the return of your bidder's check. Care must be taken to provide a legible, accurate, and complete return address, including zip code. A copy of this sheet should be used for each different return address.

## NOTE

Successful bidders will receive their guaranty checks with the executed contract.

RETURN BIDDERS CHECK TO (PLEASE PRINT):


<b>Control</b>	<b>0912-73-222</b>
<b>Project</b>	<b>F 2025(218)</b>
<b>Highway</b>	<b>VA</b>
<b>County</b>	<b>GALVESTON</b>

## IMPORTANT

### PLEASE RETURN THIS SHEET IN ITS ENTIRETY

Please acknowledge receipt of this check(s) at your earliest convenience by signing below in longhand, in ink, and returning this acknowledgement in the enclosed self addressed envelope.

Check Received By: \_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_

For (Contractor's Name): \_\_\_\_\_

Project \_\_\_\_\_ County \_\_\_\_\_

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## NOTICE TO THE BIDDER

In the space provided below, please enter your total bid amount for this project. Only this figure will be read publicly by the Department at the public bid opening.

It is understood and agreed by the bidder in signing this proposal that the total bid amount entered below is not binding on either the bidder or the Department. It is further agreed that **the official total bid amount for this proposal will be determined by multiplying the unit bid prices for each pay item by the respective estimated quantities shown in this proposal and then totaling all of the extended amounts.**

\$ \_\_\_\_\_  
**Total Bid Amount**

Control 0001-03-030  
 Project STP 2000(938)HES  
 Highway SH 20  
 County EL PASO

ALT	ITEM	DESC	SP	Bid Item Description	Unit	Quantity	Bid Price	Amount	Seq
	104	509	X	REMOV CONC (SDWLK)	MSY	266.400	\$10.000	\$2,664.00	1
						Total Bid Amount	\$2,664.00		

Signed \_\_\_\_\_  
 Title \_\_\_\_\_  
 Date \_\_\_\_\_

Additional Signature for Joint Venture:

Signed \_\_\_\_\_  
 Title \_\_\_\_\_  
 Date \_\_\_\_\_

**EXAMPLE OF BID PRICES SUBMITTED BY COMPUTER PRINTOUT**

EXAMPLE

EXAMPLE

EXAMPLE

EXAMPLE

# EXAMPLES

## BID PRICES SUBMITTED BY HAND WRITTEN FORMAT

ALT	ITEM-CODE			UNIT BID PRICE <u>ONLY</u> WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC NO	S.P. NO.				
	190	026		RED OAK 1 1/2 - 1 3/4 GAL BB	EA	9.000	1

**Unit price for each plant in place**

	249	014		FLEX BASE(DEL)(DENSOT)(TY A GR4 CL2)	TON	56,787.00	14

**Unit price for each ton of Flexible Base**

	430	001	001	CL A CONC FOR EXT STR (CULV)	CY	45.000	27

**Unit price for each cubic yard of Concrete**

	610	007	001	RDWY ILL ASSEM(TY ST 50T-8-8)(.4 KW)S	EA	13.000	7

**Unit price of each Roadway Illumination Assembly**

EXAMPLE

EXAMPLE

EXAMPLE

EXAMPLE

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PROJECT F 2025(218)  
 COUNTY GALVESTON

Proposal Sheet  
 TxDOT  
 FORM 234-B I-61-5M

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	7018	7001		BUILD 70-CAR FERRY  and  DOLLARS CENTS	EA	1.000	1

## **CERTIFICATION OF INTEREST IN OTHER BID PROPOSALS FOR THIS WORK**

By signing this proposal, the bidding firm and the signer certify that the following information, as indicated by checking "Yes" or "No" below, is true, accurate, and complete.

- A. Quotation(s) have been issued in this firm's name to other firm(s) interested in this work for consideration for performing a portion of this work.

\_\_\_\_\_ YES

\_\_\_\_\_ NO

- B. If this proposal is the low bid, the bidder agrees to provide the following information prior to award of the contract.

1. Identify firms which bid as a prime contractor and from which the bidder received quotations for work on this project.
2. Identify all the firms which bid as a prime contractor to which the bidder gave quotations for work on this project.

# DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352 (See reverse for public burden disclosure.)

<p>1. Type of Federal Action:</p> <ul style="list-style-type: none"> <li>a. contract</li> <li>b. grant</li> <li>c. cooperative agreement</li> <li>d. loan</li> <li>e. loan guarantee</li> <li>f. loan insurance</li> </ul>	<p>2. Status of Federal Action:</p> <ul style="list-style-type: none"> <li>a. bid/offer/application</li> <li>b. initial award</li> <li>c. post-award</li> </ul>	<p>3. Report Type:</p> <ul style="list-style-type: none"> <li>a. initial filing</li> <li>b. grant</li> </ul> <p style="margin-left: 40px;">For material change only:</p> <p style="margin-left: 80px;">year _____ quarter _____</p> <p style="margin-left: 80px;">date of last report _____</p>
<p>4. Name and Address of Reporting Entity:</p> <p><input type="checkbox"/> Prime                      <input type="checkbox"/> Subawardee</p> <p style="margin-left: 40px;">Tier _____, if known:</p> <p><b>Congressional District</b>, if known:</p>		<p>5. <b>If Reporting Entity in No. 4 is Subawardee</b>, Enter Name and Address of Prime:</p> <p><b>Congressional District</b>, if known:</p>
<p>6. Federal Department/Agency:</p>	<p>7. Federal Program Name/Description:</p> <p>CFDA Number, if applicable: _____</p>	
<p>8. Federal Action Number, if known:</p>	<p>9. Award Amount, if known:</p> <p>\$ _____</p>	
<p>10. a. Name and Address of Lobbying Entity (if individual, last name, first name, MI):</p> <p style="text-align: center;">(attach Continuation Sheet(s) SF-LLL-A, if necessary)</p>		<p>b. Individuals Performing Services (including address if different from No. 10a) (last name, first name, MI):</p>
<p>11. Amount of Payment (check all that apply):</p> <p>\$ _____ actual                      planned</p>	<p>13. Type of Payment (check all that apply):</p> <ul style="list-style-type: none"> <li>a. retainer</li> <li>b. one-time fee</li> <li>c. commission</li> <li>d. contingent fee</li> <li>e. deferred</li> <li>f. other; specify: _____</li> </ul>	
<p>12. Form of Payment (check all that apply)</p> <ul style="list-style-type: none"> <li>a. cash</li> <li>b. in-kind; specify:                      nature _____</li> <li style="margin-left: 40px;">value _____</li> </ul>		
<p>14. Brief Description of Services Performed or to be Performed and Date(s) of Service, including officer(s), employee(s), or Member(s) contacted, for Payment Indicated in Item 11:</p> <p>(attach Continuation Sheet(s) SF-LLL-A, if necessary)</p>		
<p>15. Continuation Sheet(s) SF-LLL-A attached:                      <input type="checkbox"/> Yes                      <input type="checkbox"/> No</p>		
<p>16. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.</p>		<p>Signature: _____</p> <p>Print Name: _____</p> <p>Title: _____</p> <p>Telephone No: _____ Date: _____</p>
<p>FEDERAL USE ONLY</p>		<p>Authorized for Local Reproduction Standard Form - LLL</p>

## **INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES**

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity 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 a covered Federal action. Use the SF-LLL-A Continuation Sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity or this covered Federal action.
4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee", then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number, the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.  
(b) Enter the full names of the individual(s) performing services, and include full address if different from 10(a). Enter Last Name, First Name, and Middle Initial (MI).
11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.
12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.
13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.
14. Provide a specific and detailed description of the services that the lobbyist has performed, or will be expected to perform, and the date(s) of any services rendered. Include all preparatory and related activity, not just time spent in actual contact with Federal officials. Identify the Federal official(s) or employee(s) contacted or the officer(s), employee(s), or Member(s) of Congress that were contacted.
15. Check whether or not a SF-LLL-A Continuation Sheet(s) is attached.
16. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, D.C. 20503.

# DISCLOSURE OF LOBBYING ACTIVITIES

Approved by OMB

0348-0046

## CONTINUATION SHEET

Reporting Entity: \_\_\_\_\_ Page \_\_\_\_\_ of \_\_\_\_\_

# CONTRACTOR'S ASSURANCE

(Subcontracts-Federal Aid Projects)

By signing this proposal, the contractor is giving assurances that all subcontract agreements will incorporate the Standard Specification and Special Provisions to Section 9.9., Payment Provisions for Subcontractors, all subcontract agreements exceeding \$2,000 will incorporate the applicable Wage Determination Decision, and all subcontract agreements will incorporate the following:

Special Provision	Certification of Nondiscrimination in Employment
Special Provision	Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)
Special Provision	Standard Federal Equal Employment Opportunity
Construction	Construction Specifications (Executive Order 11246)
Form FHWA 1273	Required Contract Provisions Federal-aid Construction Contracts (Form FHWA 1273 must also be physically attached to subcontracts and all lower-tier subcontracts)
Special Provision	Nondiscrimination (Include provisions of Sections 3.1 – 3.6 in all subcontracts and agreements for materials)
Special Provision	Cargo Preference Act Requirements in Federal-Aid Contracts
Special Provision	Disadvantaged Business Enterprise in Federal-Aid Contracts

# ENGINEER SEAL

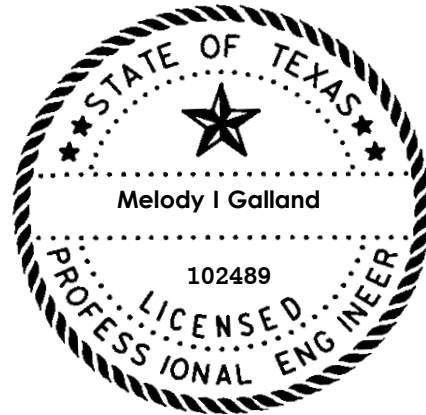
Control 0912-73-222

Project F 2025(218)

Highway VA

County GALVESTON

The enclosed Texas Department of Transportation Specifications, Special Specifications, Special Provisions, General Notes and Specification Data in this document have been selected by me, or under my responsible supervision as being applicable to this project. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.



The seal appearing on this document was authorized by  
*Melody I Galland, P.E.*  
SEPTEMBER 06, 2024

County: Galveston

Control: 0912-73-222

Highway: SH 87

**General:**

Area Engineer contact information for this project follows:

*Melody Galland, P.E., (713) 802-5551, [melody.galland@txdot.gov](mailto:melody.galland@txdot.gov)*

*Vincent Hieu Tong, P.E., (713) 802 -5060, [hieu.tong@txdot.gov](mailto:hieu.tong@txdot.gov)*

Submit any questions about this project via the Letting Pre-Bid Q&A web page, located at:

<https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors>

The Letting Pre-Bid Q&A web page for each project can be accessed by scrolling or filtering the dashboard using the controls on the left side to navigate to the project. Hover over the blue hyperlink of the project to view the Q&A and click on the link in the window that pops up.

Large files with relevant project documentation, such as Geotech reports, As-Built plans, and cross-sections will continue to be provided on the following FTP site:

<https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/Houston%20District/>

**Item 5: Control of Work**

Provide engineering & working drawings and calculations to TxDOT as outlined in the “Technical Specification” included in the proposal.

This project shall adhere to the 2024 Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges.

**Item 6: Control of Materials**

To comply with the latest provisions of the Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law, the Contractor must submit an original of the TxDOT Construction Material Buy America Certification Form for items classified as construction materials. This form is not required for materials classified as a manufactured product.

Refer to the Buy America Material Classification Sheet for clarification on material categorization.

County: Galveston

Control: 0912-73-222

Highway: SH 87

The Buy America Material Classification Sheet is located at the below link.

<https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html> for clarification on material categorization.

### **Item 7: Legal Relations and Responsibilities**

No significant traffic generator events have been identified.

### **Item 8: Prosecution and Progress**

Create, maintain, and submit for approval, a Critical Path Method (CPM) project schedule using computer software that is fully compatible with the latest version of Primavera Systems, Inc. or Primavera Project Planner (P3 or P6).

The Department will supply bidders, upon written request, one electronic copy of the time determination schedule. The time determination schedule provided is for informational use only and is not intended for bidding or construction purposes.

The Department will not adjust the number of days for the project and milestones, if any, due to differences in opinion regarding any assumptions made in the preparation of the schedule or for errors, omissions, or discrepancies found in the time determination schedule.

Working days will be computed and charged based on a calendar day workweek in accordance with Section 8.3.1.5.

### **Item 502: Barricades, Signs, and Traffic Handling**

The Contractor Force Account “Safety Contingency” that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor’s Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

County: Galveston

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**Item 506: Temporary Erosion, Sedimentation and Environmental Controls**

Due to the nature of the work involved, a Storm Water Pollution Prevention Plan (SWP3) is not required. However, if a SWP3 becomes necessary, it will be paid as extra work.

**Item 7018: Diesel Electric Ferry**

Furnish all materials, equipment, labor and allowances and incidentals necessary for the construction of 70-car Diesel Electric Ferry, as shown in the plans, Technical Specifications, and contract documents.

Construct an improved console in the pilothouses to improve ergonomics. Submit console layout and obtain approval from the Engineer prior to begin work.

Provide and install outside light under salon Deck to notify staff the emergency generator is running when vessel is secured in work dock. Submit layout and obtain approval from the Engineer prior to begin work.

Flush mount all fire extinguishers to superstructure and bulwarks. Submit layout and obtain approval from the Engineer prior to begin work.

Insulate all exterior piping, head floor drains and p-traps to protect from weather events. Submit layout and obtain approval from the Engineer prior to begin work.

Use corrosion resistant salt water approved locks to reduce salt spray corrosion on locks for the ADA Head. Submit drawing and obtain approval from the Engineer prior to begin work.

Submit the schedule of value and obtain the Engineer's approval prior to begin work.

**Texas Department of Transportation  
Building Uniform General Conditions  
as Modified for CSJ# 0912-73-222**

**Texas Department of Transportation**  
**Building Uniform General Conditions**  
**as Modified for CSJ# 0912-73-222**

**Article 1 General Definitions**

Unless the context clearly requires another meaning, the following terms have the meaning assigned herein.

- 1.1 **Architect/Engineer (A/E)** means a person registered as an architect pursuant to Tex. Occ. Code Ann., Chapter 1051, as a landscape architect pursuant to Tex. Occ. Code Ann., Chapter 1052, a person licensed as a professional engineer pursuant Tex. Occ. Code Ann., Chapter 1001 and/or a firm employed by TxDOT or Contractor to provide professional architectural or engineering services and to exercise overall responsibility for the design of a Project or a portion thereof, and to perform contract administration responsibilities as set forth in the Contract Documents.
- 1.2 **Authorization to Begin Work Letter** means the letter issued by TxDOT authorizing the Contractor to begin construction in accordance with the provisions of the Contract and establishing the date stated in the Contract for completion of the Work, or establishing the beginning date time charges will commence for computing Contract Time for completion of the Work.
- 1.3 **Building Uniform General Conditions or Building Uniform General Conditions as modified for CSJ# 0912-73-222** means this document.
- 1.4 **Business Day** means Monday through Friday, 8 a.m. to 5 p.m. excluding state and federal holidays.
- 1.5 **Calendar Day** means any day including Saturdays, Sundays, and legal holidays.
- 1.6 **Change Order** means TxDOT's written order to the Contractor detailing changes to the specified Work, item quantities, or any other necessary modification of the Contract, at TxDOT's sole discretion.
- 1.7 **Change Order Proposal** means a Contractor generated document in response to a TxDOT generated Change Order Request (COR).
- 1.8 **Change Order Request (COR)** means a document generated by TxDOT which informs the Contractor of a proposed change in the Work, and appropriately describes or otherwise documents such change.
- 1.9 **Claim** means a claim for compensation, for a time extension, or for any other remedy arising from a dispute, disagreement, or controversy concerning respective rights and obligations under the Contract.
- 1.10 **Close-out Documents** means the product brochure, production, equipment maintenance and operations instructions, manuals, and other documents/warranties, as-built record documents, affidavit of payment, release of lien and claim, and as may be further defined, identified, and required by the Contract Documents.

- 1.11 **Commission** means the Texas Transportation Commission.
- 1.12 **Contract** means the entire agreement between the Owner and the Contractor, including all of the Contract Documents, establishing the obligation of the parties for furnishing of materials and performance of the Work prescribed in the Contract Documents.
- 1.13 **Contract Date** means the date when the agreement (Contract) between the Owner and the Contractor becomes effective.
- 1.14 **Contract Documents** means those documents identified as a component of the agreement (Contract) between the Owner and the Contractor. These may include, but are not limited to, Plans, Shop Drawings, Specifications, Uniform General Conditions, Special Conditions, *Special Provisions*, *Special Specifications*, *Standard Specifications*, Change Orders, Bidding Documents, Advertisement and Invitation, Instructions to Bidders, Contractor's Proposal, and all pre-bid and/or pre-proposal addenda.
- 1.15 **Contractor** means the individual, company, partnership, limited liability company, corporation, or joint venture and all principals and representatives, jointly and severally, that are responsible for performance of a Contract awarded by the Department. In the event of termination of the Contract for cause the Surety is responsible for all obligations of the Contractor.
- 1.16 **Contract Sum** means the total compensation payable to the Contractor for completion of the Work in accordance with the terms of the Contract.
- 1.17 **Contract Time** means the period of time from the date computation of time charges begin as set forth in the Authorization to Begin Work letter to the date stated in the Contract for completion of the Work, or the number of calendar days allowed in the Contract for completion of the Work, plus any TxDOT approved extensions.
- 1.18 **Day** means a calendar day, unless otherwise specifically stipulated.
- 1.19 **Department** means the Texas Department of Transportation (TxDOT).
- 1.20 **Dispute** means a disagreement between TxDOT and the Contractor or its authorized successor over the interpretation of the Contract Documents.
- 1.21 **District Representative (DR)** means the individual identified by TxDOT who will assist the Owner's Representative in the administration of the Contract; perform periodic observations of the Work for general compliance with the plans and specifications; be the point of contact for coordination with the end-user for Work being conducted on an operational site; and perform other duties as specifically defined elsewhere in the Contract Documents and/or reflected in the Pre-construction Conference meeting minutes.
- 1.22 **Drawings** means the sealed product of the Architect/Engineer which graphically depicts the Work.
- 1.23 **Environmental Laws** means Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended ("CERCLA") 42 U.S.C. §9601 et seq.; the Toxic Substance Control Act ("TSCAS"), 15 U.S.C. §2601 et seq.; the Hazardous Materials Transportation Act, 49 U.S.C. §1802 ; the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. §9601, et seq.; the Clean Water Act ("CWA"), 33 U.S.C. §1251 et seq.; the Safe Drinking Water Act, 42 U.S.C. §300f et seq.; the Clean Air Act ("CAA"), 42 U.S.C. §7401 et seq.; M.G.L. c.

21C and c. 21E; Texas Health and Safety Code Chapter 361; Texas Water Code Chapter 26; and any permits, licenses, approvals, plans, rules, regulations or ordinances adopted, or other criteria and guidelines promulgated pursuant to the preceding laws or other similar federal, state or local laws, regulations, rules or ordinances now in effect, or that may hereafter apply, relating to environmental matters.

- 1.24 **Final Completion** means the date determined and certified by the Architect/Engineer and TxDOT on which the Work is fully and satisfactorily complete in accordance with the Contract subject to the expiration of all warranty periods or any other overriding provision of the Contract Documents.
- 1.25 **Hazardous Materials** means (i) hazardous wastes, hazardous substances, hazardous constituents, toxic substances or related materials, whether solids, liquids or gases, including but not limited to substances defined as "hazardous wastes," "hazardous substances," "oils," "toxic substances," "pollutants," "contaminants," "radioactive materials," or other similar designations in, or otherwise subject to regulation under, the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §9601 et seq.; the Toxic Substance Control Act ("TSCA"), 15 U.S.C. §2601 et seq.; the Hazardous Materials Transportation Act, 49 U.S.C. §1802; the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. §9601, et seq.; the Clean Water Act ("CWA"), 33 U.S.C. §1251 et seq.; the Safe Drinking Water Act, 42 U.S.C. §300f et seq.; the Clean Air Act ("CAA"), 42 U.S.C. §7401 et seq.; M.G.L. c. 21C and c. 21E; Texas Health and Safety Code Chapter 361; Texas Water Code Chapter 26; and in any permits, licenses, approvals, plans, rules, regulations or ordinances adopted, or other criteria and guidelines promulgated pursuant to the preceding laws or other similar federal, state or local laws, regulations, rules or ordinance now in effect, or that may hereafter apply, relating to environmental matters (collectively the "Environmental Laws"); and (ii) any other substances, constituents or wastes subject to any applicable federal, state or local law, regulation or ordinance, including any environmental law, now or hereafter in effect, including but not limited to (A) petroleum, (B) refined petroleum products, (C) waste oil, (D) waste aviation or motor vehicle fuel and (E) asbestos.; and (iii) any materials that, prior to execution of the Contract, were not designated as hazardous materials that, after execution of the Contract, become new hazardous materials subject to regulation under the aforementioned "Environmental Laws" and any applicable federal, state, or local law, regulation or ordinance.
- 1.26 **Manufacturing** for the purposes of the Buy America provision of this Contract means any process that modifies the chemical content, physical shape or size, or finish of a product. Manufacturing begins with initial melting and mixing and continues through fabrication (rolling, extruding, machining, bending, grinding, drilling, welding, cutting, etc.) and coating (paint, galvanizing, epoxy or any other coating that protects or enhances the value of the material.)
- 1.27 **Owner** means the State of Texas acting through the Texas Department of Transportation (TxDOT).
- 1.28 **Owner's Representative (OR)** means the individual assigned in writing by TxDOT to act on its behalf, and to undertake certain activities as specifically outlined in the Contract.
- 1.29 **Plans** means Drawings.

- 1.30 **Prime Contractor** means Contractor.
- 1.31 **Project** means all activities necessary for realization of the Work. This includes design, contract award(s), execution of the Work itself, and fulfillment of all Contract and warranty obligations.
- 1.32 **Project Site** means the real property on which the demolition, improvements, alternations, etc. as described in the Contract Documents will be implemented.
- 1.33 **Samples** mean representative physical examples of materials, equipment or workmanship, used to confirm compliance with requirements and/or to establish standards for use in execution of the Work.
- 1.34 **Schedule of Values** means the detailed breakdown of the cost of the materials, labor and equipment necessary to accomplish the Work as described in the Contract Documents, submitted by Contractor for approval by TxDOT.
- 1.35 **Shop Drawings** means the drawings, diagrams, illustrations, schedules, performance charts, brochures and other data prepared by the Contractor or its agents, which detail a portion of the Work.
- 1.36 **Special Conditions** means supplemental additions or revisions to the Uniform General Conditions applicable to the Contract not covered by the Uniform General Conditions. Special Conditions are a part of the Contract Documents and have precedence over the Uniform General Conditions.
- 1.37 **Special Provisions** means additions or revisions to standard specifications or special specifications.
- 1.38 **Special Specifications** means supplemental specifications applicable to the Contract not covered by standard specifications.
- 1.39 **Specifications** means the written product of the Architect/Engineer that establishes the quality and/or performance of products utilized in the Work and processes/standards to be used, including testing and verification, for compliance.
- 1.40 **Standard Specifications** means the Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges adopted September 1, 2024 and updates as posted on TxDOT official website at <http://www.txdot.gov> and relevant to the Project.
- 1.41 **State** means the State of Texas.
- 1.42 **Subcontractor** means an individual, partnership, limited liability company, corporation, or any combination thereof that the Contractor sublets any portion of the Work or provide services, materials or equipment for use in the Work.
- 1.43 **Substantial Completion** means the stage of progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents, so that TxDOT employees and the public can safely occupy, utilize, and operate the improvements and all elements of the Work for purposes intended without hindrance or material interference from the Contractor's minor "punchlist items" completion activities or on-going work performance of those portions of the Work not being considered for Substantial Completion. The date of Substantial Completion is the date established by the Contractor, Architect/Engineer and TxDOT as set forth in the Certificate of Substantial Completion issued by TxDOT.

- 1.44 **Supplemental Instruction** means a written order issued by the OR or A/E with the OR concurrence making minor changes in the Work not involving an adjustment in the Contract Sum or an extension of the Contract Time.
- 1.45 **TxDOT** means the Texas Department of Transportation acting on behalf of the State of Texas.
- 1.46 **Unit Price Work** means Work or a portion of the Work paid for based on incremental units of measurement.
- 1.47 **Uniform General Conditions (UGC)** means Building Uniform General Conditions.
- 1.48 **Unilateral Change Order (ULCO)** means a Change Order issued by the Department without the agreement of the Contractor.
- 1.49 **Work** means the administration, procurement, materials, equipment, construction and all services necessary for the Contractor, and/or its agents, to fulfill the Contractor's obligations under the Contract.

## Article 2 Laws Governing Construction

- 2.1 Compliance with Laws. In the execution of the Contract the Contractor shall make himself familiar with and at all times comply with all applicable State, Federal and Local laws, statutes, ordinances and regulations including but not limited to, laws governing labor, equal employment opportunity, safety, environmental protection, antiquities and primitive records preservation, and prevailing wage rates which in any manner affect the conduct of the Work.
  - 2.1.1 Fees and Permits. The Contractor shall cooperate with governmental officials at all times where their jurisdiction applies. The Contractor shall make application and pay all fees and provide supporting documentation necessary to secure permits, licenses, certificates, etc. which are required for performance of the Work. The Contractor has a continuing obligation throughout the term of the Contract to conduct operations under duly issued permits and, in the event the Contractor loses or has revoked a necessary permit, the Contractor must take immediate steps to apply for and receive another permit. TxDOT hereby confirms the Contractor is not required to obtain building permits for Work performed on TxDOT property. The Texas Accessibility Standards (TAS) compliance review and inspection fees will be the responsibility of the Architect/Engineer.
  - 2.1.2 Change in Laws. If there is any change between the date the Contract is executed and Final Completion in any applicable legal requirements which require a change in the Work in order to avoid a violation of any such applicable legal requirement, Contractor shall be responsible for changing the Work in order to avoid a violation of such legal requirements. A Change Order shall be executed to adjust the Contract Sum and/or Contract Time, if applicable, as a result of a change in legal requirements. If there is a change in any applicable legal requirement but the Work or portion thereof affected by such change is deemed to be "grandfathered" (i.e., the applicable legal requirement does not require that the Work be changed), such portion of the Work shall nevertheless be deemed to be in compliance with such applicable legal requirements and

Contractor shall not be required to change the Work to otherwise comply with such changed legal requirements.

- 2.2 Environmental Laws. The Contractor shall conduct activities in compliance with applicable Environmental Laws and regulations and other requirements of the Contract relating to the environment, and its protection at all times.
- 2.2.1 Unless otherwise specifically determined, TxDOT is responsible for obtaining and maintaining permits related to stormwater run-off. The Contractor covenants to conduct its operations consistent with stormwater run-off permit conditions.
- 2.2.2 Contractor is responsible for all items it brings to site, including Hazardous Materials, and all such items brought to the site by its subcontractors and suppliers, or by other entities subject to direction of the Contractor.
- 2.2.3 The Contractor shall not incorporate hazardous materials into the Work without prior written approval of TxDOT, and shall provide an affidavit attesting to such in association with request for Substantial Completion inspection.
- 2.3 Wage Rates. The Contractor shall not pay less than the wage scale of the various classes of labor as shown on the "Prevailing Wage Schedule" provided by TxDOT and attached to the Contract pursuant to Chapter 2258, Texas Government Code. The specified wage rates are minimum rates only. The "Prevailing Wage Schedule" is not a representation that qualified labor adequate to perform the Work is available locally at the prevailing wage rates. The Contractor or Subcontractor shall pay overtime wages as required by the Fair Labor Standards Act, 29 United States Code 201, et. seq.
- 2.3.1 Additional Classification. Should the Contractor at any time become aware that a particular skill or trade not reflected on TxDOT's Prevailing Wage Schedule will be or is being employed in the Work, whether by the Contractor or by a Subcontractor, the Contractor shall promptly submit to TxDOT a written request for additional classification with a recommended wage rate and supporting documentation pursuant to Texas Administrative Code, Title 43, Part 1, Chapter 9, Subchapter A, Rule §9.5. TxDOT may modify or disapprove the Contractor's recommendation within thirty (30) days of receipt.
- 2.3.1.1 Apprentices and trainees may work at less than the predetermined minimum wage rate for work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship or trainee program registered with the United States Department of Labor, Employment and Training Administration. Submit proof of program and individual registration to TxDOT.
- 2.3.2 Records. The Contractor and all Subcontractors shall keep, or cause to be kept, copies of weekly payrolls for review by TxDOT for a period of three years after completion of the project in accordance with Texas Administrative Code, Title 43, Part 1, Chapter 9, Subchapter A, Rule §9.5. As a condition of payment and pursuant to Texas Government Code §2113.102, TxDOT internal audit staff may audit the Contractor and Subcontractor during normal business hours.
- 2.3.3 Penalty for Violation. The Contractor and any Subcontractor is liable to TxDOT for a penalty of sixty dollars (\$60) for each worker employed for each calendar day, or portion thereof, that the worker is paid less than the wage rates stipulated in TxDOT's Prevailing Wage Schedule and any supplements thereto.

The money collected under this provision shall be used by TxDOT to offset the costs incurred in the administration of this provision.

#### 2.3.4 Complaints of Violations

- 2.3.4.1 A proceeding concerning a violation of Tex. Gov't Code, Chapter 2258, Prevailing Wage Rates, may be initiated by a worker who is not paid the prevailing wage rate specified in the Contract filing a complaint with the Department's area engineer responsible for monitoring the Project or by the Department on its own motion subsequent to a review of the records required to be kept in accordance with Texas Administrative Code, Title 43, Part 1, Chapter 9, Subchapter A, Rule §9.5.
- 2.3.4.2 Within five (5) calendar days of receipt of a complaint, including supporting information, or at any time upon its own motion, the Department will provide written notice to the Contractor or Subcontractor of an alleged violation. The Contractor shall have ten (10) calendar days in which to respond in writing to the information present against it.
- 2.3.4.3 The director of the appropriate TxDOT Division shall determine, within thirty (30) calendar days of the date a complaint is filed whether good cause exists to believe that the Contractor or Subcontractor has committed a violation of the Contract's prevailing wage rate requirements. TxDOT will send documentation of the initial determination to the Contractor against whom the violation was alleged, and to the worker involved.
- 2.3.4.4 Upon making a good-cause finding, TxDOT will retain the full amounts claimed by the claimant or claimants as the difference between wages paid and wages due under the Prevailing Wage Schedule and any supplements thereto, together with the applicable penalties, such amounts being subtracted from successive progress payments pending a final decision on the violation.
- 2.3.4.5 If the Department provides written notice to the parties that good cause exists, the parties shall have fourteen (14) calendar days from the date of the written determination to voluntarily resolve the wage dispute by written agreement. If the dispute is voluntarily resolved a copy of the signed written agreement shall be provided to the appropriate TxDOT Division director including a signed statement from the worker(s) which acknowledges receipt of back pay if part of the agreement. The Department shall release any amounts retained less penalties within seven days of receiving this information.
- 2.3.4.6 If the violation is not resolved within fourteen (14) days following initial determination by TxDOT, the Contractor and the claimant worker must participate in binding arbitration in accordance with the Texas General Arbitration Act, Tex. Civ. Prac. & Rev. Code, Chapter 171. The Department is not a party to the arbitration proceeding.
- 2.3.4.7 If an arbitrator assesses an award against the Contractor, the Contractor shall promptly furnish a copy of said award to the Department. TxDOT may use any amounts retained under Article 2.3.4.4 to pay the worker the amount as designated in the arbitration award. If the retained funds are insufficient to pay the worker in accordance with the arbitration award, the worker has a right of action against the Contractor, and/or the

subcontractor to receive the remaining amount owed. TxDOT has no duty to release any funds to either the claimant or the Contractor until it has received the notices of agreement or the arbitration award and the Department shall release funds within seven (7) and thirty (30) days, respectively.

- 2.3.4.8 If the Department's determination proves valid that good cause existed to believe a violation had occurred, the Contractor is not entitled to an extension of contract time for any delay arising directly or indirectly from of the arbitration procedures set forth herein.
- 2.4 Venue for Suits. The venue for any suit arising from this Contract will be in a court of competent jurisdiction in Travis County, Texas.
- 2.5 Licensing of Trades. The Contractor shall comply with all applicable provisions of state law related to license requirements for professionals, skilled tradesmen, contractors, materialmen, suppliers and or laborers, as necessary to accomplish the Work.
- 2.5.1 Loss of License. In the event the Contractor, or one of its Subcontractors or sub-tier contractors, loses its license during the term of performance of the Contract, the Contractor shall promptly hire or contract or cause to hire or contract with a licensed provider of the service at no additional cost to TxDOT.
- 2.6 Royalties, Patents & Copyrights. The Contractor shall be responsible at all time for compliance with applicable patents, trademarks or copyrights encompassing, in whole or in part, any design, device, material, or process utilized, directly or indirectly, in the performance of the Work.
- 2.6.1 Royalties, Fees and Legal Agreement. Whether or not TxDOT has specified the use of a particular design, device, material or process, the Contractor shall pay all royalties and license fees and shall provide, prior to commencement of the Work hereunder, and at all times during the performance of same, for lawful use of any design, device, material or process covered by letters patent or copyright by suitable legal agreement with patentee, copyright or trademark holder or their duly authorized representative.
- 2.6.2 Indemnification. **THE CONTRACTOR SHALL FULLY INDEMNIFY, SAVE AND HOLD HARMLESS TXDOT OF AND FROM ANY COSTS, LOSSES, DAMAGES OR LIABILITIES RESULTING FROM ITS FAILURE, OR THE FAILURE OF THE CONTRACTORS, ITS / SUBCONTRACTORS AND/OR ANY ENTITIES OR PERSONS FOR WHOM THE CONTRACTOR IS RESPONSIBLE TO COMPLY STRICTLY WITH THE ROYALTIES, PATENTS & COPYRIGHTS PROVISION. THIS PROVISION SHALL SURVIVE THE TERMINATION OF THE CONTRACT.**
- 2.7 State Sales and Use Taxes TxDOT qualifies for exemption from State and Local Sales and Use Taxes pursuant to the provisions of Tex. Tax Code, Chapter 151. The Contractor shall claim exemption from payment of applicable State taxes by complying with such procedures as prescribed by the State Comptroller of Public Accounts in Title 34 Texas Administrative Code §3.287.
- 2.8 Federal Transportation Tax. The State is not liable for the Federal tax imposed by Section 3475 of the Internal Revenue Code on transportation charges on materials purchased by the State. The Contractor is specifically authorized to consign the construction materials to be incorporated in this Contract to the Texas Department

of Transportation since the materials are deemed to have been purchased by the State of Texas.

By virtue of the State granting this authority, the Internal Revenue Department has ruled that the tax will not be collected provided the materials purchased by the Contractor are consigned to the State. [See Internal Revenue Code 3443(3).]

This provision is not intended and shall not be construed as relieving the Contractor of any and all costs in connection with the furnishing of such materials to the project, including all transportation costs and incurred demurrage.

- 2.9 Antiquities. Contractor shall take precaution to avoid disturbing primitive records and antiquities of archaeological, paleoanthropological or historical significance. No objects of this nature shall be disturbed without the written permission of TxDOT and the Texas Historical Commission. When such objects are uncovered unexpectedly, the Contractor shall stop all Work in close proximity and notify the Owner's Representative of their presence and shall not disturb them until written permission and permit to do so is granted. All primitive rights and antiquities, as defined in Chapter 191, Texas Natural Resource Code, discovered on TxDOT's property shall remain property of the State of Texas. If it is determined by TxDOT, in consultation with the Texas Historical Commission that exploration or excavation of primitive records or antiquities on the Project Site is necessary to avoid loss, Contractor shall cooperate in salvage work attendant to preservation. If the Work stoppage or salvage work causes an increase in the Contractor's cost of, or time required for, performance of the Work, Contractor shall be entitled to request an adjustment to the Contract Sum and/or Contract Time as provided herein.

## **Article 3 General Responsibilities of Owner & Contractor**

- 3.1 Owner's General Responsibilities. The Owner is the entity identified as such in the Contract and referred to throughout the Contract Documents as if singular in number.
- 3.1.1 Preconstruction Conference. After the issuance of the Authorization to Begin Work Letter but prior to the commencement of time charges a conference will be convened for attendance by the Owner's Representative (OR), District Representative (DR), Contractor, and Architect/Engineer (A/E), if any. The purpose of the conference is to establish a working understanding among the parties as to the Work, the operational conditions at the project site, and general administration of the Project. Topics include communications, schedules, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, maintaining required records and all other matters of importance to the administration of the Project and effective communications between the project team members.
- 3.1.2 Owner's Representative. Prior to the start of construction, TxDOT will identify the Owner's Representative (OR), also known as TxDOT Project Manager, who will be responsible for general administration of the Contract. The Owner's Representative will decide all questions which may arise as to the quality or acceptability of materials furnished and work performed; the manner of performance and rate of progress of the Work; interpretations of the plans and specifications; and acceptable fulfillment of the Contract on the part of the Contractor.

- 3.1.2.1 The Owner's Representative will not take any actions in contravention of a design decision made by the A/E of Record in preparation of the plans and specifications, when such actions are in conflict with statutes under which the A/E is licensed for the protection of the public health or safety.
- 3.1.2.2 Unless otherwise specifically defined elsewhere in the Contract Documents, the OR is the single point of contact between TxDOT and Contractor. Notice to the OR, unless otherwise noted, constitutes notice to TxDOT under the Contract.
- 3.1.2.3 All directives on behalf of TxDOT will be conveyed to the Contractor by the OR in writing unless otherwise specifically defined elsewhere in the Contract Documents.
- 3.1.3 District Representative. Prior to the start of construction, TxDOT will identify the District Representative (DR) who will assist the Owner's Representative in the administration of the Contract, perform observations of the Work progress for general compliance with the plans and specifications, be the point of contact for coordination with the end-user for Work being conducted on an operational site and perform other duties as specifically defined elsewhere in the Contract Documents and/or reflected in the Pre-construction Conference meeting minutes.
- 3.1.4 TxDOT Supplied Materials and Information.
  - 3.1.4.1 TxDOT will furnish to the Contractor, to the extent they are available at the time of Contract execution, surveys describing the physical characteristics, legal description, limitations of the site, known site utility locations, and other information used in the preparation of the Contract Documents.
  - 3.1.4.2 TxDOT will provide information, equipment, or services under TxDOT's control required by the Contract Documents to be provided to the Contractor with reasonable promptness.
- 3.1.5 Availability of Lands. TxDOT will furnish, unless indicated otherwise on the Plans and Specifications, all required rights to use TxDOT property upon which the Work occurs. This includes rights-of-way and property access license(s) for access for use by the Contractor unless stated otherwise in the Contract Documents. The Contractor shall comply with all TxDOT identified encumbrances or restrictions specifically related to use of lands so furnished. TxDOT will provide property access license(s) for permanent infrastructure on State property when so required for execution of the Work, unless otherwise required in the Contract Documents.
- 3.1.6 Limitation on Owner's Duties.
  - 3.1.6.1 TxDOT will not supervise, direct, control or have authority over or be responsible for Contractor's means, methods, technologies, sequences or procedures of construction or the safety precautions and programs incident thereto. TxDOT is not responsible for any failure of Contractor to comply with laws and regulations applicable to the Work. TxDOT is not responsible for the failure of Contractor to perform or furnish the Work in accordance with the Contract Documents. TxDOT is not responsible for the acts or omissions of Contractor, or any of its subcontractors, suppliers or of any other person or organization performing or furnishing any of the Work directly or indirectly on behalf of the Contractor.

- 3.1.6.2 TxDOT will not take any action in contravention of a design decision made by the A/E in preparation of the Contract Documents, when such actions are in conflict with statutes under which the A/E is licensed for the protection of the public health and safety.
- 3.2 Role of Architect/Engineer. To the extent specified in the Contract between TxDOT and the Architect/Engineer, the A/E shall provide general administration services for TxDOT during the construction phase of the project. Written correspondence, requests for information, and shop drawings/submittals shall be directed to the Owner's Representative with a copy to the A/E. The A/E has the authority to act on behalf of TxDOT to the extent provided in the Contract Documents, unless otherwise modified by written instrument, which will be furnished to the Contractor by the OR, upon request.
  - 3.2.1 Site Visits.
    - 3.2.1.1 The A/E will make visits to the site at intervals as provided in the A/E's contract agreement with TxDOT, to observe the progress and the quality of the various aspects of Contractor's executed Work and report findings to TxDOT.
    - 3.2.1.2 The A/E has the authority to interpret plans and specifications provided by the A/E and inspect the Work covered by same for compliance and conformance with the plans and specifications. Except as referenced in Article 3.1.6.2, TxDOT retains the sole authority to accept or reject Work and issue direction for correction, removal, or replacement of Work.
  - 3.2.2 Clarifications and Interpretations. It may be determined that clarifications or interpretations of the plans and specifications provided by the A/E are necessary. Upon direction by the OR such clarifications or interpretations will be provided by the A/E consistent with the intent of the aforementioned plans and specifications. The A/E will issue these clarifications with reasonable promptness to the OR as Architect's Supplemental Instruction (ASI) or similar instrument. The OR will be responsible for transmittal of an ASI to the Contractor. If the Contractor believes that such clarification or interpretation justifies an adjustment in the Contract Sum or the Contract Time, the Contractor shall so notify TxDOT in accordance with the provisions of Article 11.
  - 3.2.3 Limitations on Architect/Engineer Authority. The A/E is not responsible for:
    - 3.2.3.1 The Contractor's means, methods, techniques, sequences, procedures, safety, or programs incident to the Project nor will the A/E supervise, direct, control or have authority over the same.
    - 3.2.3.2 The failure of Contractor to comply with laws and regulations applicable to the furnishing or performing the Work.
    - 3.2.3.3 The Contractor's failure to perform or furnish the Work in accordance with the Contract Documents.
    - 3.2.3.4 Acts or omissions of the Contractor, or of any other person or organization performing or furnishing any of the Work.
- 3.3 Contractor's General Responsibilities. The Contractor is solely responsible for implementing the Work in full compliance with all applicable laws and the Contract Documents and shall supervise and direct the Work using the best skill and attention to assure that each element of the Work conforms to the Contract

requirements. The Contractor is solely responsible for all construction means, methods, techniques, safety, sequences, coordination and procedures.

- 3.3.1 Cooperation of Contractor. The Contractor shall cooperate with TxDOT, other contractors, utility companies, governmental/regulatory agency representatives, etc. whose work/operations are directly or indirectly impacted by the execution of the Work. At the written request of TxDOT, the Contractor shall immediately remove from the work locations any employee or representative of the Contractor or a subcontractor who, in the option of TxDOT, displays uncooperative behavior or who is disrespectful, disorderly, or otherwise objectionable. These individuals may not be reinstated without the written consent of TxDOT.
- 3.3.2 Beginning of Work. The Contractor shall not begin work until authorized by TxDOT in the Authorization to Begin Work letter.
- 3.3.3 Project Administration. The Contractor shall provide project administration for all subcontractors, sub-tier contractors, vendors, suppliers, and others involved in implementing the Work and shall coordinate administration efforts with those of the A/E and OR in accordance with these Uniform General Conditions, any Special Conditions, any applicable provisions of Division 1 Specifications, and as outlined in the Pre-construction Conference.
- 3.3.4 Contractor's Superintendent. Contractor shall employ a competent resident superintendent who will be present at the Project Site during the progress of the Work. The superintendent proposed for the project is subject to the approval of the OR. Approved superintendents may not be changed during the course of the project without the written approval of the OR, unless the superintendent leaves the employ of the Contractor.
- 3.3.5 Labor. Contractor shall provide competent, suitably qualified personnel to survey, lay-out, and provide any other services required to construct the Work as required by the Contract Documents and maintain good discipline and order at the Site at all times. At the written request of TxDOT, Contractor shall immediately remove from the work locations any employee or representative of the Contractor or a subcontractor who, in the option of TxDOT, does not perform work in a proper and skillful manner and may not reinstate these individuals without the written consent of TxDOT.
- 3.3.6 Services, Materials, and Equipment. Unless otherwise specified, provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities, incidentals, and services necessary for the construction, performance, testing, start-up, inspection and completion of the Work.
- 3.3.7 Non-Compliant Work. Should the A/E, to the extent provided for in Article 3.2, or at any time the OR or DR identify Work as non-compliant with the Contract Documents, the OR will communicate the finding to the Contractor and the Contractor will correct such Work at its expense. The approval of Work by either the A/E or OR does not relieve the Contractor from the obligation to comply with all requirements of the Contract Documents.
- 3.3.8 Subcontractors. Contractor shall not employ, directly or indirectly, any Subcontractor, supplier or other person or organization, whether initially or as a substitute, against whom TxDOT may have reasonable objection. TxDOT will

communicate such objections in writing. The Contractor is not required to employ any Subcontractor, supplier or other person or organization to furnish any of the work to whom the Contractor has reasonable objection. The Contractor will not substitute Subcontractors without the acceptance of TxDOT.

- 3.3.8.1 All Subcontracts and supply contracts shall be consistent with and bound to the terms and conditions of the Contract Documents including provisions of the Agreement between the Contractor and the Owner.
- 3.3.8.2 The Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with the Contractor. The Contractor shall require all Subcontractors, suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with TxDOT only through the Contractor. Upon written request of the OR, the Contractor shall promptly furnish to TxDOT a copy of any specified subcontract promptly. The Contractor agrees that TxDOT has no obligation to review or approve the content of such contracts and that providing TxDOT such copies in no way relieves the Contractor of any of the terms and conditions of the Contract, including, without limitation, any provisions of the Contract which require the Subcontractor to be bound to the Contractor in the same manner in which the Contractor is bound to the Owner.
- 3.3.9 Availability of Other Lands. The Contractor shall be solely responsible for obtaining authorization and pay any related fees to work within lands not under the sole control of TxDOT.
- 3.3.10 Continuing the Work. The Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes, disagreements or dispute resolution processes with TxDOT. No Work shall be delayed or postponed pending resolution of any disputes, disagreements or processes, except as TxDOT and the Contractor may agree in writing.
- 3.3.11 Cleaning. The Contractor shall at all times, keep the Site and the Work clean and free from accumulation of waste materials or rubbish caused by the construction activities under the Contract. The Contractor shall ensure that the entire Project is thoroughly cleaned prior to requesting Substantial Completion Inspection and, again, upon completion of the Project prior to the final inspection.
- 3.3.12 Errors, Omissions and Negligent Acts of the Contractor, its Subcontractors and Employees. The Contractor shall be responsible for errors, omissions and negligent acts of its employees, subcontractors, suppliers and their agents and employees. This shall not be limited by any tier of subcontracting/supplier or “independent” contactor status. TxDOT may, in writing, require the Contractor to remove from the Project any of its employees or Subcontractor employees that the OR finds to be careless, incompetent, or otherwise objectionable.
- 3.3.13 Laws to be Observed. The Contractor shall make itself familiar with and at all times shall observe and comply with all Federal, State, and local laws, and regulations which in any manner affect the conduct of the Work.
- 3.3.14 Indemnification of Owner. **THE CONTRACTOR COVENANTS AND AGREES TO FULLY INDEMNIFY AND HOLD HARMLESS, TXDOT, ET ALIA AS**

**SET FORTH IN VARIOUS SECTIONS OF THE CONTRACT DOCUMENTS. IN THE EVENT THE CONTRACTOR AND TXDOT ARE FOUND JOINTLY LIABLE BY A COURT OF COMPETENT JURISDICTION, LIABILITY SHALL BE APPORTIONED COMPARATIVELY IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS AND WITHOUT WAIVING ANY DEFENSES OF THE PARTIES UNDER TEXAS LAW. THIS PROVISION SHALL SURVIVE THE TERMINATION OF THE CONTRACT.**

- 3.3.14.1 The provisions of this Indemnification are solely for the benefit of the parties hereto and TxDOT's successor or assignee, if any, and not intended to create or grant any rights, contractual or otherwise, to any other person or entity.
- 3.3.14.2 The Contractor shall promptly advise TxDOT in writing of any claim or demand against TxDOT or the Contractor known to the Contractor related to or arising out of the Contractor's activities under this Contract.
- 3.3.15 Ancillary Areas. The Contractor shall operate and maintain operations and associated storage areas at the site of the Work in accordance with the following:
  - 3.3.15.1 Contractor shall confine all its operations, including storage of materials and employee parking upon the Site of Work, to areas designated by the OR or DR.
  - 3.3.15.2 The Contractor may erect, at its own expense, temporary buildings that will remain its property and shall remove such buildings and associated utility service lines upon completion of the Work, unless the Contractor requests and TxDOT provides written consent that it may abandon such buildings and utilities in place.
  - 3.3.15.3 The Contractor shall use only established roadways or construct and use such temporary roadways as may be authorized by the OR or DR; shall not allow load limits of vehicles to exceed the limits prescribed by appropriate regulations or law; and shall provide protection to road surfaces, curbs, edges of pavement, sidewalks, trees, shrubbery, sprinkler systems, drainage structures and other like existing improvements to prevent damage and repair any damage thereto at the expense of the Contractor.
  - 3.3.15.4 TxDOT may restrict the Contractor's entry to the site to specifically assigned entrances and routes.
- 3.3.16 Environment. The Contractor shall not directly or indirectly through any employees, agents, representatives, Subcontractors, invitees or any other persons occupying the Site or any portion thereof by, through or under the Contractor cause pollution of air, soil, and water in, on, or around the Site or improvements through the release or discharge of any Hazardous Materials. Contractor, at its sole cost and expense, shall take any and all corrective action required by any applicable federal, state, county, municipal, and other laws, codes, ordinances, rules, and regulations clean up, remove, and abate any and all soil contamination, groundwater contamination, or any other contamination of the Site caused directly or indirectly by any release or discharge of any Hazardous Materials in, on, under, and around the Site by Contractor and/or Contractor's employees, agents representatives, Subcontractors, invitees, or any other person occupying the Site or any portion thereof by, through, or under

Contractor (but excluding TxDOT and its employees, agents, representatives or invitees occupying the Site or any portion thereof by, through, or under TxDOT). Contractor shall not have any responsibility or liability for, and TxDOT shall be, as between TxDOT and Contractor, responsible and liable for, (unless specifically stated otherwise in the Contract Documents) the monitoring, handling, remediation, disposal, clean-up or removal and/or abatement of any pre-existing soil contamination, ground water contamination or any other contamination of the Site, known or unknown, that are pre-existing as of the date of the Contract execution, except to the extent such liability or damage is caused by the Contractor's or its Subcontractor's negligence in dealing with any known Hazardous Materials. Any pre-existing materials at the Site or materials specified for use in the Project that were not defined as Hazardous Materials prior to execution of the Contract but are designated new Hazardous Materials after execution of the Contract and must be remediated, removed or replaced in accordance with the Contract Documents or any applicable rules, regulations or ordinances adopted, or other criteria and guidelines promulgated pursuant to existing laws or new laws relating to environmental matters may support a Change Order if so determined by TxDOT.

- 3.3.17 Utilities. The Contractor shall be responsible for, unless stated otherwise in the plans and specifications, and bear all costs to extend utility services to the site. Utility services shall be as called for in the plans and specifications and services may include, but not be limited to, water, gas, electricity, sanitary service, and communications. The Contractor shall obtain and bear all costs of inspections, plan approvals, permits, taps, pavement cuts and any other fees, assessments or costs established by the appropriate utility provider and the authority having jurisdiction over the non-TxDOT controlled property the utility Work may impact. Contractor shall provide and bear all costs for protection of infrastructure under control of utility service provider. Protection of infrastructure shall be as determined by utility service provider.
- 3.3.18 Separate Contracts. Additional Contractor responsibilities when TxDOT awards separate Contracts.
- 3.3.18.1 TxDOT reserves the right to award other contracts in connection with other portions of the Project under these or similar contract conditions.
- 3.3.18.2 TxDOT reserves the right to perform operations related to the Project with TxDOT forces and shall be responsible for any activities performed under separate contract.
- 3.3.18.3 Under a system of separate contracts, the conditions described herein continue to apply except as may be amended by Change Order.
- 3.3.19 Ancillary / Integral Professional Services. In selecting an architect, engineer or land surveyor, etc. to provide professional services, if any, that are required by the Plans and Specifications, Contractor shall not do so on the basis of competitive bids but shall make such selection on the basis of demonstrated competence and qualifications to perform the services in the manner provided by Tex. Gov't Code §2254.004.
- 3.3.20 Continuing the Work. Contractor shall carry on the Work and adhere to the Project Schedule during all disputes, disagreements or dispute resolution processes with TxDOT. No Work shall be delayed or postponed pending resolution of any disputes, disagreements or processes except as TxDOT and the Contractor may agree in writing.

## **Article 4 Historically Underutilized Business (HUB) Subcontracting Plan**

- 4.1 General Description. The purpose of the Historically Underutilized Business (HUB) Program is to promote equal business opportunities for economically disadvantaged persons (as defined by Tex. Gov't Code, Chapter 2161) to contract with the State of Texas. The HUB Program is applicable to TxDOT contracts relating to buildings, professional services, aviation, public transportation, private consultant services, and purchases funded entirely with State and local funds.
- 4.1.1 State agencies are required by statute to make a good faith effort to assist HUBs in participating in contract awards issued by the State. TxDOT's rules, Texas Administrative Code, Title 43, Part 1, Chapter 9, Subchapter D, outline TxDOT's policy to encourage outreach to and potential utilization of HUBs in subcontracting opportunities through race, ethnic and gender neutral means. The goal of this program is to promote full and equal business opportunity for all businesses in State contracting.
- 4.1.2 A contractor who contracts with the State in an amount in excess of \$100,000 shall be required to make a good faith effort to award subcontracts to HUBs in accordance with the cited rules by submitting a HUB Subcontracting Plan and complying with the Subcontracting Plan after it is accepted by TxDOT and during the term of the Contract.
- 4.2 Compliance with Approved HUB Subcontracting Plan. The Contractor, having been awarded this Contract in part by complying with the HUB Program statute and rules, hereby covenants to continue to comply with the HUB Program as follows:
- 4.2.1 Prior to substituting a Subcontractor, promptly notify TxDOT in the event a change is required for any reason to the accepted HUB Subcontracting Plan.
- 4.2.2 Conduct the good faith effort activities required and provide TxDOT with necessary documentation to justify approval of a change to the approved HUB Subcontracting Plan.
- 4.2.3 Cooperate in the execution of a Change Order or such other approval of the change in the HUB Subcontracting Plans as the Contractor and TxDOT may agree to.
- 4.2.4 Maintain and make available to TxDOT upon request business records documenting compliance with the accepted HUB Subcontracting Plan.
- 4.2.5 Upon receipt of payment for performance of Work, the Contractor shall submit to TxDOT a compliance report, in the format as provided by TxDOT that demonstrates Contractor's performance of the HUB Subcontracting Plan.
- 4.2.6 Promptly and accurately explain and provide supplemental information to TxDOT to assist in TxDOT's investigation of the Contractor's good faith effort to fulfill the HUB Subcontracting Plan.
- 4.3 Failure to Demonstrate Good Faith Effort. Upon a determination by TxDOT the Contractor has failed to demonstrate a good faith effort to fulfill the HUB Subcontracting Plan or any Contract covenant detailed above, TxDOT may, in addition to all other remedies available to it, report the failure to perform to the Texas Procurement and Support Services (TPASS) with the Texas Comptroller of

Public Accounts, and may bar the Contractor from future contracting opportunities with TxDOT.

- 4.4 Monthly Reporting. Submit monthly a current HUB Subcontracting Plan (HSP) Prime Contractor Progress Assessment Report on forms provided by TxDOT or downloaded from the Texas Comptroller of Public Accounts web site [www.window.state.tx.us](http://www.window.state.tx.us). (form titled "Progress Assessment Report") documenting compliance with the HSP. This report shall include current information for all HUB and Non-HUB subcontractors and HUB suppliers.
- 4.5 Final Report. The requirement for monthly reporting as set forth in Article 4.4 shall survive Final Acceptance of the Project. The Contractor shall submit monthly HUB Subcontracting Plan (HSP) Prime Contractor Progress Assessment Report documenting compliance with the HSP until all HUB and Non-HUB subcontractors and HUB suppliers have been tendered final payment and shall so designate by labeling the report form "FINAL REPORT".

## **Article 5 Bonds & Insurance**

- 5.1. Construction Bonds. The Contractor is required to tender to TxDOT, prior to commencing work, performance and payment bonds, as required by Tex. Gov't Code, Chapter 2253.
- 5.1.1. Payment Bond. A payment bond is required if the Contract Sum is in excess of \$25,000. The payment bond is payable to the State, in the full amount of the Contract Sum and solely for the protection and use of payment bond beneficiaries who have a direct contractual relationship with the Contractor or supplied required materials or labor.
- 5.1.2. Performance Bond. A performance bond is required if the Contract Sum is in excess of \$100,000. The Performance Bond is solely for the protection of the State, in the full amount of the Contract Sum and conditioned on the faithful performance of the Work in accordance with the Contract Documents.
- 5.1.3. Surety Requirements. Each bond shall be executed on TxDOT's form by a corporate surety or sureties authorized to do business in the State of Texas, acceptable to the Owner and in compliance with the relevant provisions of the Texas Insurance Code. If a Surety upon a bond loses its authority to do business in the State, the Surety's underwriting limitation drops below the required bond amount or the Surety is declared bankrupt or insolvent, the Contractor shall, within fifteen (15) days after occurrence of any of the aforementioned events, furnish a replacement bond at no added cost to TxDOT. In such event the Work will be suspended until a substitute Surety acceptable to TxDOT is provided and a non-compensable time extension to the Contract will be granted for the fifteen (15) days or thirty (30) days if an acceptable Surety is not readily provided, whichever is sooner. The Contractor's inability to find an acceptable Surety within thirty (30) days will be deemed a breach of contract and TxDOT may, in its sole discretion assess liquidated damages or declare the Contract in default and terminate the Contract.
- 5.1.4. Power of Attorney. Each bond shall be accompanied by a valid Power-of-Attorney (issued by the Surety company and attached, signed and sealed with

the corporate embossed seal, to the bond) authorizing the attorney in fact who signs the bond to obligate the company to the terms of the bond, and state any limits in the amount for which the attorney can issue a single bond.

- 5.1.5. Bond Indemnification. The process of requiring and accepting bonds and making claims thereunder shall be conducted in compliance with Tex. Gov't Code, Chapter 2253. **IF FOR ANY REASON A STATUTORY PAYMENT OR PERFORMANCE BOND IS NOT HONORED BY THE SURETY, THE CONTRACTOR SHALL FULLY INDEMNIFY AND HOLD THE OWNER HARMLESS OF AND FROM ANY COSTS, LOSSES, OBLIGATIONS OR LIABILITIES IT INCURS AS A RESULT.**
- 5.1.6. Furnishing Bond Information. TxDOT shall furnish a certified copy of the payment bond and the related Contract to any qualified person who complies with Tex. Gov't Code, §2253.026.
- 5.1.7. Claims on Payment Bonds. Claims on payment bonds must be sent directly to the Contractor and his Surety in accordance with Texas Government Code § 2253.041. All Payment Bond claimants are cautioned that no lien exists on the funds unpaid to the Contractor on such Contract, and that reliance on notices sent to TxDOT may result in loss of their rights against the Contractor and/or his Surety. TxDOT is not responsible in any manner to a claimant for collection of unpaid bills, and accepts no such responsibility because of any representation by any agent or employee.
- 5.1.8. Performance Bond Surety's Obligation. The Surety for the Performance Bond shall undertake the obligations of the Contractor in the event of the Contractor's failure to perform pursuant to the Contract or in the event of Contractor's insolvency or bankruptcy.
- 5.2. Insurance Requirements. The Contractor shall carry insurance in the types and amounts indicated in this Article and as otherwise required by the Contract Documents for the duration of the Contract unless specifically stated otherwise. Regardless of approval and issuance of Final Acceptance, the Contract is not deemed fully performed by the Contractor and closed until the expiration of all warranty periods. TxDOT shall not be deemed or construed to have assessed the risk that may be applicable to the Contractor under this Contract. The Contractor shall assess its own risks and if it deems appropriate and/or prudent, maintain higher limits and/or broader coverages at no additional cost to TxDOT.
  - 5.2.1. The required insurance shall include coverage for TxDOT's property in the care, custody and control of Contractor, its subcontractors and its agents prior to construction, during construction and during the warranty period.
  - 5.2.2. The required insurance shall be evidenced by delivery of a TxDOT certificate of insurance executed by the insurer or its authorized agent during contract execution. Provide an updated TxDOT certificate of insurance prior to expiration. In the event the Contractor fails to maintain the required insurance all work shall stop until TxDOT receives an acceptable certificate of insurance. Contract Time charges will not be suspended in the event work is stopped due to the failure of the Contractor to maintain the required insurance. The acceptance of the insurance certificate by TxDOT shall not relieve or decrease the liability of the Contractor.
  - 5.2.3. Without limiting any of the other obligations or liabilities of the Contractor, the Contractor shall require each Subcontractor performing work under the Contract

to maintain during the term of the Contract, the same required minimum insurance including the required provisions and additional policy conditions unless specifically stated otherwise. The Contractor shall obtain and monitor the certificates of insurance from each Subcontractor in order to assure compliance with the insurance requirements. As an alternative, the Contractor may include its Subcontractors as additional insured on the Contractor's coverage. In such event the Contractor's certificate of insurance shall note that Subcontractors are included as additional insured.

- 5.2.4. Coverage shall be written on an occurrence basis by companies authorized and admitted to do business in the State of Texas and acceptable to TxDOT unless specifically stated otherwise.
- 5.2.5. Shipbuilder's Risk Insurance shall be dedicated project insurance and specific to this Contract.
- 5.2.6. All deductibles shall be the sole responsibility of the Contractor.
- 5.2.7. The insurance requirements specified do not reduce the liability the Contractor has assumed in the indemnification/hold harmless provisions of the Contract.
- 5.2.8. Upon written request, TxDOT, and/or its agents, shall be entitled to receive without expense, copies of the required policies and endorsements.
- 5.3. Required Policy Clauses. Unless stated otherwise policies must include the following clauses:
  - 5.3.1. Notice shall be delivered to TxDOT in accordance with the policy provisions should this insurance policy be cancelled before the expiration date thereof.
  - 5.3.2. This insurance policy shall not be materially changed or non-renewed without notice being delivered to TxDOT in accordance with the policy provisions.
  - 5.3.3. It is agreed that the Contractor's insurance shall be deemed primary with respect to any insurance or self-insurance carried by the State agency for liability arising out of operations and activities under the Contract with TxDOT.
  - 5.3.4. TxDOT, its officials, directors, employees, representatives, and volunteers are added as additional insured as respects operations and activities of, or on behalf of, the named insured performed under Contract with TxDOT. **This requirement is not applicable to the workers' compensation policy.**
- 5.4. Workers' Compensation Insurance.

5.4.1.

Limits of liability not less than:	Statutory as required by the Texas Workers' Compensation Act
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- 5.4.2. Worker's Compensation Insurance coverage must meet the statutory requirements of the Texas Labor Code, §401.011(44) and specific to construction projects for public entities as required by Texas Labor Code, §406.096.
- 5.4.3. The Contractor shall provide TxDOT with a current Workers' Compensation Insurance coverage certificate for each Subcontractor and all sub-tier subcontractors employed on the project in accordance with Texas Labor Code §406 .096(b).

5.4.4. The policy shall be endorsed with a Waiver of Subrogation in favor of TxDOT.

5.5. Commercial General Liability Insurance.

5.5.1.	Limits of liability not less than:	\$5,000,000 or 100% of Contract Value whichever is greater
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5.5.2. Coverage shall include liability arising from products/completed operations, liability arising from explosion, collapse, underground property damage, damage to the work, and liability assumed under contract.

5.6. Business Automobile Policy.

5.6.1.

Limits of liability not less than:	\$600,000 combined single limit
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5.6.2. If coverage is specified separately:

Limits of liability not less than:	
Bodily Injury	\$250,000 each person \$500,000 each occurrence
Property Damage	\$100,000 each occurrence

5.6.3. Coverage extends to owned, hired and non-owned vehicles assigned to or used in performance of the Contract.

5.7. Shipbuilder's Insurance

5.7.1.	Limits of liability not less than:	\$5,000,000 or 100% of Contract Value whichever is greater
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Throughout the contract period and the warranty period, contractor must maintain insurance coverage of not less than the amount specified above. This coverage maybe a single policy, or it may be multiple policies covering different phases of the contract, such as policy covering shipbuilding through delivery and acceptance and a separate policy covering the warranty period. In any case, there must be no lapse in coverage until the warranty period has expired any any claims arising during the contract or the warranty period have expired.

5.7.2. Policy during the contract period shall provide coverage for liabilities arising out of Marine Operations, including under Commercial General Liability Insurance, All Risk Marine Hull and Machinery Insurance and Protection, and Indemnity Insurance. Policy shall cover the vessel and such parts as shall be constructed and all materials, engines, machinery, outfit and equipment to be installed in or on the vessel, as well as all of TXDOT's supplied equipment within the premises of the shipyard, against all risks of loss or damage through delivery and acceptance of the vessel. Coverage shall include, but is not limited to: Collision, Ship Sinking, Explosions, Fire, Wind, Lightning, Water, Hail, Smoke, Theft, Vandalism, Malicious Mischief, Collapse, Flood, Earthquake, Hurricane, Tornado, and damage resulting from faulty workmanship, materials, or design provided directly or indirectly by the Contractor. Coverage shall include transit and storage of materials and equipment in an amount sufficient to protect property being transported or stored.

The coverage shall include coverage for contractual liability, wreck removal, sudden and accidental pollution, tower's liability if applicable, special operations and full collision coverage.

Policy shall protect the ship whether in dry dock, at port, at anchor, or at sea.

5.7.3. In addition to bonding, the Contractor shall obtain additional insurance coverage for the seaworthiness of the vessel and general liability insurance, such as inherent risk or marine insurance, to eliminate the potential for any challenges to insurability the bonding company may raise or dispute during the 1-year warranty period.

Policy during the warranty period shall provide coverage for liabilities arising out of Marine Operations, including Commercial General Liability Insurance, All Risk Marine Hull and Machinery Insurance and Protection, and Indemnity Insurance. Policy shall cover the vessel and such parts as shall be constructed and all materials, engines, machinery, outfit and equipment to be installed in or on the vessel, as well as all of TXDOT's supplied equipment within the premises of the shipyard, against all risks of loss or damage through the warranty period. Coverage shall include, but is not limited to: Collision, Ship Sinking, Explosions, Fire, Wind, Lightning, Water, Hail, Smoke, Theft, Vandalism, Malicious Mischief, Collapse, Flood, Earthquake, Hurricane, Tornado, and damage resulting from faulty workmanship, materials, or design provided directly or indirectly by the Contractor. Coverage shall include transit and storage of materials and equipment in an amount sufficient to protect property being transported or stored.

The coverage shall include coverage for contractual liability, wreck removal, sudden and accidental pollution, tower's liability if applicable, special operations and full collision coverage.

Policy shall protect the ship whether in dry dock, at port, at anchor, or at sea.

5.7.4 The policy or policies shall have endorsements as follow:

5.7.4.1. TXDOT shall be named as Loss Payee under the Loss payable clause.

5.7.4.2. The insurance shall be specific as to coverage and not considered as contributing insurance with any permanent insurance maintained on the vessel.

5.7.4.3. The insurance shall waive any limitation provided by any applicable liability statute.

5.7.5. Contractor shall provide TXDOT the opportunity to review and approve all insurance policies required under this Contract, such approval not be unreasonably denied.

## Article 6 Contract Documents

### 6.1 Drawings and Specifications

6.1.1 Copies Furnished. The Contractor will be furnished, free of charge four (4) complete sets of Drawings and Specifications and any Addenda issued prior to execution of the Contract. The Contractor shall obtain and pay for any additional complete sets of Drawings, Specifications and Addenda.

6.1.2 Ownership of Plans and Specifications. All Plans, Specifications and copies thereof furnished by TxDOT are, and shall remain, TxDOT's intellectual property. These documents are not to be used on any other project, and shall be returned to TxDOT, upon request, following completion of the Work.

6.1.3 Interrelation of Documents. The Contract Documents as referenced in the Contract between the Owner and the Contractor are complimentary, and what is required by one shall be as binding as if required by all.

6.1.4 Resolution of Conflicts in Documents. In the event of a conflict between and/or within the Contract Documents, the higher quality, greater quantity, more restrictive, and/or more expensive requirement shall be the basis of Contractor pricing, and the Contractor shall notify the A/E and the OR for resolution of the issue prior to executing the Work in question.

6.1.5 Contractor's Duty to Review Contract Documents. In order to facilitate its responsibilities for completion of the Work in accordance with and as reasonably inferable from the Contract Documents, prior to pricing or commencing the Work, the Contractor shall examine and compare the Contract Documents, information furnished by TxDOT, relevant field measurements

made by the Contractor and any visible or reasonably anticipated conditions at the site affecting the Work. This duty extends throughout the construction phase prior to commencing each particular work activity and/or system installation.

6.1.6 Errors and Omissions in Drawings and Specifications.

6.1.6.1 Promptly report to the OR and to the A/E the discovery of any apparent error, omission or inconsistency in the Contract Documents prior to execution of the Work.

6.1.6.2 The Contractor has no liability for design errors and omissions unless the Contractor knowingly failed to report a recognized problem to TxDOT or the element of Work is performed as outlined in 6.1.6.4. Should the Contractor fail to perform the examination and reporting obligations of these provisions, the Contractor is responsible for avoidable costs, direct, and/or consequential damages.

6.1.6.3 It is recognized that the Contractor is not acting in the capacity of a licensed design professional, unless the Contractor, its subcontractors or agent provide the design for any element of the Work requiring the services of a licensed design professional.

6.1.6.4 When the Contractor, its subcontractors or agents provide the design for any element of the Work requiring the services of a licensed design professional the Contractor has responsibility for discrepancies, errors, and omissions in the drawings and specifications provided for that element of the Work.

6.2 Requirements for Record Documents. The Contractor shall maintain at the Site one copy of all Drawings, Specifications, addenda, approved Submittals, Contract modifications, and all Project correspondence; keep current and maintain Drawings and Specifications in good order with postings and markings to record actual conditions of Work and show and reference all changes made during construction; and provide OR, DR and A/E access to these documents.

6.2.1 The Contractor shall maintain this record set of Drawings and Specifications which reflect the "As Constructed" conditions and representations of the Work performed, whether it be directed by addendum, Change Order or otherwise and make available all records prescribed herein for reference and examination by TxDOT and its representatives and agents.

6.2.2 The Contractor shall update the "As-Constructed" Drawings and Specifications monthly prior to submission of periodic partial pay estimates. Failure to maintain such records constitutes cause for denial of a progress payment otherwise due.

6.2.3 Prior to requesting Substantial Completion Inspection the Contractor shall furnish the OR and A/E a complete legible set (a legible photocopy is acceptable) of the marked up "As-Constructed" set of plans and specifications maintained at the site. Concurrently with furnishing these record drawings, the Contractor shall furnish a preliminary copy of each operating and maintenance manual (O&M) required by the Contract Documents, for review by the A/E and the OR.

6.2.4 Once determined acceptable, the Contractor shall provide four (4) sets of operating and maintenance manuals, approved submittals, and other record documents as required elsewhere in the Contract Documents. Submission and

acceptance of these documents is a condition for the issuance of the Certificate of Substantial Completion by the OR. Any "As-Built" modifications to approved shop drawings which were prepared and issued under the seal of a licensed/registered professional must be reviewed and reissued under the seal of the licensed/registered professional of record.

## **Article 7 Safety**

- 7.1 General. It is the duty and responsibility of the Contractor and all of its Subcontractors to be familiar with, enforce and comply with all requirements of Public Law 91-596, 29 U.S.C. §§651 et. seq., the Occupational Safety and Health Act of 1970, (OSHA) and all amendments thereto. The Contractor and all of its Subcontractors shall comply with all applicable laws and regulations of any public body having jurisdiction for safety of persons or property to protect them from damage, injury or loss and erect and maintain all necessary safeguards for such safety and protection.
- 7.2 Notices. The Contractor shall provide notices as follows:
- 7.2.1 Notify owners of adjacent property including those that own or operate utility services and/or underground facilities, and utility owners, when prosecution of the Work may in any way affect them or their facilities, and cooperate with them in the protection, removal, relocation and replacement, and access to their facilities and/or utilities.
- 7.2.2 Coordinate the exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in connection with laws and regulations. Maintain a complete file of MSDS for all materials in use on site throughout the construction phase and make such file available to TxDOT and its agents as requested.
- 7.3 Emergencies. In any emergency affecting the safety of persons or property, the Contractor shall act to minimize, mitigate, and prevent threatened damage, injury or loss.
- 7.3.1 The Contractor shall have its authorized agents respond immediately upon call at anytime of day or night when circumstances warrant the presence of Contractor to protect the Work or adjacent property from damage or to take such action pertaining to the Work as may be necessary to provide for the safety of the public.
- 7.3.2 The Contractor shall give the OR, DR and A/E prompt notice of all such events.
- 7.3.3 If the Contractor believes that any changes in the Work or variations from Contract Documents have been caused by its emergency response, the Contractor shall promptly notify the OR, DR and A/E in writing within 72 hours of the emergency response event detailing the event, actions taken and changes in the Work.
- 7.3.4 Should the Contractor fail to respond, TxDOT is authorized to direct other forces to take action as necessary and TxDOT may deduct any cost of remedial action from funds otherwise due the Contractor.

- 7.4 Injuries. In the event of an incident or accident involving outside medical care for an individual on or near the Work, Contractor shall notify the OR, DR and other parties as may be directed within twenty-four (24) hours of the event.
- 7.4.1 The Contractor shall record the location of the event and the circumstances surrounding it, by using photography or other means, and gather witness statements and other documentation which describes the event.
- 7.4.2 The Contractor shall supply the OR, DR and AE with an incident report no later than 36 hours after the occurrence of the event. In the event of a catastrophic incident (one fatality or a worker hospitalized), barricade and leave intact the scene of the incident until all investigations are complete. A full set of incident investigation documents, including facts, finding of cause, and remedial plans shall be provided within one week after occurrence, unless otherwise directed by legal counsel. Contractor shall provide the OR with written notification within one week of such catastrophic event and submit a full report.
- 7.5 Environmental Safety. Upon encountering any previously unknown potentially hazardous material, or other materials potentially contaminated by hazardous material, Contractor shall immediately stop work activities impacted by the discovery, secure the affected area, and notify the OR, DR and A/E immediately.
- 7.5.1 The Contractor shall bind all Subcontractors to the same duty.
- 7.5.2 Upon receiving notice of environmental safety or hazardous materials, the OR will promptly engage qualified experts to make such investigations and conduct such tests as may be reasonably necessary to determine the existence or extent of any environmental hazard. As soon as possible upon completion of this investigation, the OR will issue a written report to the Contractor identifying the material(s) found and indicate any necessary steps to be taken to treat, handle, transport or dispose of the material.
- 7.5.3 TxDOT may hire third-party contractors to perform any or all such steps.
- 7.5.4 Should compliance with the OR's instructions result in an increase in the Contractor's cost of performance, or delay the Work, TxDOT will make an equitable adjustment to the Contract price and/or the time of completion, and modify the Contract in writing accordingly in accordance with the provisions of the Contract.
- 7.5.5 If the hazardous material event is the result of a release or discharge of Hazardous Materials by the Contractor directly or indirectly through any employees, agents, representatives, Subcontractors, invitees or any other persons occupying the Site or any portion thereof by, through or under the Contractor, the Contractor at its sole cost and expense, shall take any and all corrective action required by any applicable federal, state, county, municipal, and other laws, codes, ordinances, rules, and regulations to report, clean up, remove, and abate any and all soil contamination, groundwater contamination, or any other contamination of the Site caused directly or indirectly by any release or discharge of any Hazardous Materials.
- 7.6 Environmental Quality. The Contract shall prevent pollution of air, soil, and water in, on, under or around the Project Site. The Contractor, at its sole cost and expense shall take any and all corrective actions deemed necessary or desirable by TxDOT, and as required by any applicable federal, state, county, municipal, and other laws, codes, ordinances, rules and regulations to clean, remove and abate any and all such contamination of the air, soil, and water in, on under or around the

Project Site or adjacent lands caused directly or indirectly by any release or discharge of any hazardous, toxic, or otherwise harmful substances at the Project Site by the Contractor and/or any entities or persons for whom the Contractor is responsible.

- 7.7 **INDEMNITY FOR ENVIRONMENTAL DAMAGES.** IF THE CONTRACTOR AND/OR ANY ENTITIES OR PERSONS FOR WHOM THE CONTRACTOR IS RESPONSIBLE BRING OR DISPOSE OF ANY HAZARDOUS, TOXIC, OR OTHERWISE HARMFUL SUBSTANCES ONTO THE SITE, THE CONTRACTOR WILL INDEMNIFY, SAVE AND HOLD HARMLESS TXDOT FROM AND AGAINST ANY AND ALL CLAIMS, SUITS, CAUSES OF ACTION, LOSSES AND ALL OTHER DAMAGE AND EXPENSE (INCLUDING COST OF DEFENDING AGAINST THE AFORESAID).

THE CONTRACTOR'S INDEMNITY HEREUNDER INCLUDES, BUT IS NOT LIMITED TO, ANY NEGLIGENT ACT OR OMISSION OF THE CONTRACTOR AND/OR ANY ENTITIES OR PERSONS FOR WHOM THE CONTRACTOR IS RESPONSIBLE. CONTRACTOR SHALL BEAR THE COSTS FOR REMEDIATION OF ANY RESULTING ENVIRONMENTAL DAMAGES DUE TO THE ACTIVITIES OF THE CONTRACTOR, ITS SUBCONTRACTORS AND/OR ANY ENTITIES OR PERSONS FOR WHOM THE CONTRACTOR IS RESPONSIBLE. THE CONTRACTOR'S INDEMNITY AND OBLIGATIONS HEREUNDER WILL SURVIVE THE TERMINATION OF THIS CONTRACT.

- 7.8 Trenching Plan. When the project requires excavation which either exceeds a depth of five feet, or results in any worker's upper body being positioned below grade level, the Contractor is required to submit a trenching plan to the OR prior to commencing trenching operations providing the necessary protection to comply with the most current version of OSHA Standards and Interpretations, 29 CRF 1926, Subpart P, "Excavations." The plan is required to be prepared and sealed by a professional engineer registered in the State of Texas, and employed by the Contractor. Said engineer cannot be anyone who is otherwise either directly or indirectly engaged on this project.

- 7.9 **INDEMNIFICATION OF TXDOT.** THE CONTRACTOR SHALL FULLY INDEMNIFY, SAVE AND HOLD HARMLESS TXDOT OF AND FROM ANY COSTS, LOSSES, DAMAGES OR LIABILITIES RESULTING FROM ITS FAILURE, OR THE FAILURE OF THE CONTRACTORS AND/OR SUBCONTRACTORS, TO COMPLY STRICTLY WITH THESE PROVISIONS. CONTRACTOR SHALL BEAR THE COSTS FOR ANY DAMAGES DUE TO THE ACTIVITIES OF THE CONTRACTORS, ITS SUBCONTRACTORS AND/OR ANY ENTITIES OR PERSONS FOR WHOM THE CONTRACTOR IS RESPONSIBLE. THIS PROVISION SHALL SURVIVE THE TERMINATION OF THE CONTRACT.

## Article 8 Quality Control

- 8.1 Materials & Workmanship. The Contractor shall execute Work in a good and workmanlike manner in accordance with the Contract Documents. If required by a Special Condition the Contractor shall develop and provide a Quality Control Plan specific to this project and acceptable to TxDOT. Where Contract Documents do not specify quality standards, the Contractor shall complete and construct all Work in compliance with generally accepted construction industry standards. Unless

otherwise specified, the Contractor shall incorporate all new materials and equipment into the Work under the Contract.

## 8.2 Testing.

8.2.1 Contractor Testing. The Contractor is responsible for coordinating and paying for all routine and special tests required to confirm compliance with quality and performance requirement of the Contract Documents. This “quality control” testing shall include any particular testing required by the Plans and Specifications and the following general tests:

8.2.1.1 Any test of basic material or fabricated equipment included as part of a submittal for a required item in order to establish compliance with the Contract Documents.

8.2.1.2 Any test of basic material or fabricated equipment offered as a substitute for a specified item on which a test may be required in order to establish compliance with the Contract Documents.

8.2.1.3 Routine, preliminary, start-up, pre-functional and operational testing of building equipment and systems as necessary to confirm operational compliance with requirements of the Contract Documents.

8.2.1.4 All subsequent tests on original or replaced materials conducted as a result of prior testing failure.

8.2.2 TxDOT Testing. TxDOT reserves the right to subject materials and systems incorporated into the Project to routine tests as may be specified or as deemed necessary by the OR or the A/E to ensure compliance with the quality and/or performance requirements of the Contract Documents and/or with laws, ordinances, rules, regulations and/or orders of any public authority having jurisdiction. The results of such “quality assurance” testing will be provided to the Contractor and, to the extent provided, the Contractor may rely on findings.

8.2.2.1 All testing shall be performed in accordance with standard test procedures by an accredited laboratory, or special consultant as appropriate, acceptable to TxDOT. Results of all tests shall be provided promptly to the OR, A/E and the Contractor.

8.2.3 Non-Compliance (Test Results). Should any of the tests indicate that a material and/or system does not comply with the contract requirements, the burden of proof remains with the Contractor, subject to:

8.2.3.1 Contractor selection and submission of the laboratory for TxDOT acceptance.

8.2.3.2 Acceptance by TxDOT of the quality and nature of tests.

8.2.3.3 All tests taken in the presence of the A/E and/or OR, or their representatives.

8.2.3.4 If tests confirm that the material/systems, indicated by TxDOT testing to not be in compliance with Contract Documents, are in compliance with Contract Documents, TxDOT will pay the cost of the test.

8.2.3.5 If tests reveal noncompliance, the Contractor will pay those laboratory fees and costs of that particular test and all future tests, of that failing Work, necessary to eventually confirm compliance with Contract Documents.

- 8.2.3.6 Proof of noncompliance with the Contract Documents will make the Contractor liable for any corrective action which the OR determines appropriate, including complete removal and replacement of non-compliant work or material at not additional cost to TxDOT.
- 8.2.4 Notice of Testing. The Contractor shall give the OR, DR and AE timely notice of its readiness and the date arranged so the OR and/or AE or their designated representative may observe such inspection, testing or approval.
- 8.2.5 Test Samples. The Contractor is responsible for providing samples of sufficient size for test purposes and for coordinating such tests with their Work Progress Schedule to avoid delay.
- 8.2.6 Covering Up Work. If the Contractor covers up any Work without providing TxDOT an opportunity to inspect, the Contractor shall, if requested by OR, uncover and recover the work at Contractor's expense.
- 8.3 Deficiencies in the Work. TxDOT reserves the right to withhold from funds remaining unpaid under the Contract amounts required to pay the costs of, but not limited to, the following:
  - 8.3.1 Special site visits required to re-examine a cited deficiency which has not been corrected after a total of two visits. The provisions for comprehensive inspections set forth in Article 12 shall govern those inspections.
  - 8.3.2 Special monitoring to ensure compliance with the Contract Documents due to non-performance or poor workmanship.
  - 8.3.3 Assessments of potential damage, resulting from failure of the Contractor to protect the Work.
- 8.4 Submittals.
  - 8.4.1 Contractor's Submittals. Contractor shall submit in accordance with the Project Schedule and in orderly sequence all Shop Drawings, Samples, or other information required by the Contract Documents, or subsequently required by Change Order. Prior to submitting, the Contractor shall review each submittal for compliance with Contract Documents and certify compliance by approval stamp affixed to each copy. Submittal data presented without the Contractor's certification will be returned without review or comment, and any delay resulting from such certification is the Contractor's responsibility.
    - 8.4.1.1 Within twenty-one (21) calendar days of issuance of the Authorization to Begin Work letter, unless otherwise modified by the OR in writing, the Contractor shall submit to the OR and A/E, a submittal schedule/register, organized by specification section, listing all items to be furnished for review and approval by the A/E and TxDOT. The list shall include shop drawings, manufacturer's literature, certificates of compliance, materials samples, materials colors, guarantees, and all other items identified throughout the specifications.
    - 8.4.1.2 The Contractor shall indicate the type of item, contract requirements reference, and Contractor's scheduled dates for submitting the item along with the requested dates for approval answers from the A/E and TxDOT. Reference Special Conditions for any additional item tracking/reporting information required to be included in the submittal schedule/register. The submittal register shall be updated at least monthly with actual approval

dates. The Contractor shall allow a minimum of fifteen (15) calendar days duration after receipt by the A/E and OR for review and approval of each submittal. If re-submittal is required, the Contractor shall allow a minimum of an additional fifteen (15) calendar days for review. The Contractor shall submit the updated submittal register with each request for progress payment. TxDOT may establish routine review procedures and schedules for submittals at the preconstruction conference and/or elsewhere in the Contract Documents or as otherwise necessary.

- 8.4.1.3 The Contractor shall coordinate the submittal register with the Work Progress Schedule. The Contractor shall not schedule Work requiring a submittal to begin prior to scheduling review of the related submittal. The Contractor shall revise and/or update both schedules monthly to ensure consistency and current project data; provide to the OR the updated submittal register and schedule with each application for progress payment: refer to requirements for the Work Progress Schedule for inclusion of procurement activities therein, if any; and schedule for inclusion of procurement activities therein, if any. The submittal register shall identify dates submitted and returned and shall be used to confirm status and disposition of particular items submitted, including approval or other action taken and other information not conveniently tracked through the Work Progress Schedule.
- 8.4.1.4 By submitting Shop Drawings, Samples or other required information, the Contractor represents and certifies that they have determined and verified all applicable field measurements, field construction criteria, materials, catalog numbers and similar data, have been determined and verified and that each Shop Drawing and Sample has been checked and coordinated with the requirements of the Work and the Contract Documents.
- 8.4.2 Review of Submittals. A/E and OR review are only for conformance with the design concept and the information provided in the Contract Documents. Responses to submittals will be in writing. The approval of a separate item does not indicate approval of an assembly in which the item functions. The approval of a submittal does not relieve the Contractor of responsibility for any deviation from the requirements of the Contract unless the Contractor informs the A/E and OR of such deviation in a clear, conspicuous, and written manner on the submittal transmittal and at the time of submission, and obtains TxDOT's written specific approval of the particular deviation.
- 8.4.3 Correction and Resubmission. The Contractor shall make any corrections required to a submittal and resubmit the required number of corrected copies promptly so as to avoid delay of submittal approval. The Contractor shall direct attention in writing to the A/E and the OR, when applicable, to any new revisions other than the corrections requested on previous submissions.
- 8.4.4 Limits on Shop Drawing Review. The Contractor shall not commence any Work requiring a submittal before review of the submittal. The Contractor shall construct all such work in accordance with reviewed submittals and the Contract Documents. Review of Shop Drawings and Samples is not authorization to Contractor to perform extra work or changed work unless authorized through a Change Order. The A/E's and OR's review, if any, does not relieve Contractor from responsibility for defects in the Work resulting from

errors or omissions of any kind on the submittal, regardless of any review action.

- 8.4.5 No Substitutions Without Approval. The OR and the A/E may receive and consider the Contractor's request for substitution when the Contractor agrees to reimburse TxDOT for direct and indirect review costs and satisfies 8.4.5.1, 8.4.5.2, and 8.4.5.3 in combination with one or more of the items in 8.4.5.4 through 8.4.5.11 of the following conditions, as determined by TxDOT. If the Contractor does not satisfy these conditions, the OR and A/E will return the request without action except to record noncompliance with these requirements. TxDOT will not consider the request if the Contractor cannot provide the product or method because of failure to pursue the Work promptly or coordinate activities properly.
- 8.4.5.1 The Contract Documents do not require extensive revisions.
  - 8.4.5.2 Proposed changes are in keeping with the general intent of the Contract Documents and the design intent of the A/E and do not result in an increase in cost to TxDOT.
  - 8.4.5.3 The request is timely, fully documented, and properly submitted.
  - 8.4.5.4 The Contractor cannot provide the specified product, assembly or method of construction within the Contract Time.
  - 8.4.5.5 The request directly relates to an "or-equal" clause or similar language in the Contract Documents.
  - 8.4.5.6 The request directly relates to a "product design standard" or "performance standard" clause in the Contract Documents.
  - 8.4.5.7 The requested substitution offers TxDOT a substantial advantage in cost, time, energy conservation or other considerations, after deducting additional responsibilities TxDOT must assume.
  - 8.4.5.8 The specified product or method of construction cannot receive necessary approval by an authority having jurisdiction, and the OR can approve the requested substitution.
  - 8.4.5.9 The Contractor cannot provide the specified product, assembly or method of construction in a manner that is compatible with other materials and where the Contractor certifies that the substitution will overcome the incompatibility.
  - 8.4.5.10 The Contractor cannot coordinate the specified product, assembly or method of construction with other materials and the Contractor certifies they can coordinate the proposed substitution.
  - 8.4.5.11 The specified product, assembly or method of construction cannot provide a warranty required by the Contract Documents and the Contractor certifies that the proposed substitution provides the required warranty.
- 8.4.6 Unauthorized Substitutions at Contractor's Risk. The Contractor is financially responsible for any additional costs or delays resulting from using materials, equipment or fixtures other than those specified. The Contractor shall reimburse TxDOT for any increased design or contract administration costs resulting from any unauthorized substitutions.

## 8.5 Field Mock-Up.

8.5.1 Mockups shall be constructed prior to commencement of a specified scope of work to confirm acceptable workmanship.

8.5.1.1 As a minimum, field mock-ups shall be as identified throughout the Contract Documents. Mockups for systems not part of the project scope shall not be required.

8.5.1.2 Mock-ups may be incorporated into the Work if allowed by the Contract Documents and if acceptable to the OR. If mock-ups are freestanding, they shall remain in place until otherwise directed by the OR.

8.5.1.3 The Contractor shall include field mock-ups in their Work Progress Schedule and shall notify the OR and A/E of readiness for review sufficiently in advance to coordinate review without delay.

## 8.6 Inspection During Construction.

8.6.1 The Contractor shall provide sufficient, safe, and proper facilities, including equipment as necessary for safe access, at all reasonable times for observation and/or inspection of the Work by TxDOT and its agents.

8.6.2 The Contractor shall not cover up any work with finishing materials or other building components prior to providing TxDOT and its agents an opportunity to perform an inspection of the Work.

8.6.2.1 Should corrections of the Work be required for approval, the Contractor shall not cover up corrected Work until TxDOT indicates approval.

8.6.2.2 Provide notification of at least five (5) calendar days or as otherwise mutually agreed, to the OR of the anticipated need for a cover up inspection. Should the OR fail to make the necessary inspection within the agreed period, the Contractor may proceed with cover up Work, but is not relieved of responsibility for Work to comply with requirements of the Contract Documents.

## Article 9 Construction Schedules

9.1 Contract Time. **TIME IS AN ESSENTIAL ELEMENT OF THE CONTRACT.** The Contract Time can be modified only by Change Order. Failure to achieve Substantial Completion within the Contract Time will cause damage to TxDOT and subject the Contractor to Liquidated Damages as provided in the Contract Documents.

9.2 Authorization to Begin Work. TxDOT will issue an Authorization to Begin Work Letter authorizing the Contractor to begin construction in accordance with the provisions of the Contract and establishing the date stated in the Contract for completion of the Work, or establishing the beginning date time charges will commence for computing Contract Time for completion of the Work.

9.3 Work Progress Schedule. The Contractor shall refer to any Special Condition and/or any Division 1 Specifications for alternate or additional schedule requirements. Unless indicated otherwise in those documents, Contractor shall submit the initial Work Progress Schedule for the Work in relation to the entire

Project not later than twenty-one (21) days after the date of the Authorization to Begin Work Letter to the OR and A/E. Unless otherwise indicated in any Special Condition and/or Specification, the Work Progress Schedule shall be a computerized Critical Path Method (CPM) with full reporting capability and in a format and in sufficient detail acceptable to TxDOT. The initial schedule shall indicate the dates for starting and completing the various aspects required to complete the Work, including mobilization, procurement, installation, testing, inspection, and acceptance of all the Work of the Contract. When acceptable to TxDOT, the initially accepted schedule shall be the Baseline Schedule for comparison to actual conditions throughout the contract duration. Failure of the Contractor to provide a Work Progress Schedule as set forth above will be considered sufficient cause for TxDOT to order the work under the Contract to be stopped without suspension of Contract time charges.

- 9.3.1 Schedule Requirements. The Contractor shall submit electronic and paper copy of the initial Work Progress Schedule reflecting accurate and reliable representations of the planned progress of the Work, the Work performed to date, if any, and the Contractor's actual plans for its completion. The Contractor shall organize and provide adequate detail so the Schedule is capable of measuring and forecasting the effect of delaying events on completed and uncompleted activities.
  - 9.3.1.1 The Contractor shall re-submit initial Schedule as required to address review comments from A/E and OR until such Schedule is accepted as the Baseline Schedule.
  - 9.3.1.2 Submittal of a schedule, schedule revision or schedule update constitutes the Contractor's representation to TxDOT of the accurate depiction of all progress to date and that the Contractor will follow the schedule as submitted in performing the Work.
- 9.3.2 Schedule Updates. The Contractor shall update the Work Progress Schedule and the Submittal Schedule monthly, as a minimum, to reflect progress to date and current plans for completing the Work, and submit paper and electronic copy of the update to the A/E and OR as directed. TxDOT has no duty to make progress payments unless accompanied by the updated Work Progress Schedule. Show the anticipated date of completion reflecting all extensions of time granted through Change Order as of the date of the update. The Contractor may revise the Progress Schedule logic only with TxDOT's concurrence when in the Contractor's judgment it becomes necessary for the management of the Work. The Contractor shall identify all proposed changes to schedule logic to TxDOT and to the A/E via an Executive Summary accompanying the updated schedule for review prior to implementation of revisions.
- 9.3.3 Effect of Work Progress Schedule. The Work Progress Schedule is for the Contractor's use in managing the Work. Submittal of the Schedule, and successive updates or revisions, is for the information of TxDOT and to demonstrate that the Contractor has complied with requirements for planning the Work. TxDOT's acceptance of a schedule, schedule update or revision constitutes TxDOT's agreement to coordinate its own activities with the Contractor's activities as shown on the schedule.

- 9.3.3.1 Acceptance of the Work Progress Schedule, or update and/or revision thereto does not indicate any approval of the Contractor's proposed sequences and duration.
  - 9.3.3.2 Acceptance of a Work Progress Schedule update or revision indicating early or late completion does not constitute TxDOT's consent, alter the terms of the Contract, or waive either the Contractor's responsibility for timely completion or TxDOT's right to damages for the Contractor's failure to do so.
  - 9.3.3.3 The Contractor's scheduled dates for completion of any activity or the entire Work do not constitute a change in terms of the contract. Change Orders are the only method of modifying the completion Date(s) and Contract Time.
- 9.4 Ownership of Float. Float time contained in the Work Progress Schedule is not for the exclusive benefit of the Contractor or TxDOT, but belongs to the Project and may be consumed by either party as needed on a first-used basis.
- 9.5 Completion of Work. The Contractor is accountable for completing the Work in the time stated in the Contract, or as otherwise amended by Change Order.
- 9.5.1 If, in the judgment of TxDOT, the work is behind schedule and the rate of placement of work is inadequate to regain scheduled progress to insure timely completion of the entire work or a separable portion thereof, TxDOT shall so notify the Contractor and Surety.
  - 9.5.2 Within ten (10) calendar days after such notice from the OR, the Contractor shall notify the OR in writing of the specific measures taken and/or planned to facilitate timely completion of the entire work or a separable portion thereof and include an estimate as to the date of scheduled progress recovery and an updated Work Progress Schedule illustrating the Contractor's plan for achieving timely completion of the project.
- 9.6 Computation of Contract Time for Completion. TxDOT will furnish the Contractor a monthly statement on prescribed forms, showing the number of calendar days charged during the month, total number of days allowed in the Contract and the number of days remaining under the Contract. The Contractor will be allowed ten (10) calendar days in which to protest the correctness of the statement with supporting documentation, otherwise the statement will stand.
- 9.7 Modification of the Contract Time.
- 9.7.1 Delays and extension of time as hereinafter described are valid only if executed in accordance with provisions set forth in Article 11.
  - 9.7.2 When a delay defined herein as excusable prevents the Contractor from completing the Work within the Contract Time, the Contractor is entitled to an extension of time. TxDOT will make an equitable adjustment and extend the number of calendar days lost because of excusable delay, as measured by the Contractor's progress schedule. All extensions of time will be granted in calendar days. In no event, however, will an extension of time be granted for delays that merely extend the duration of non-critical activities, or which only consume float without delaying the project completion date.

- 9.7.2.1 Excusable Delay. The Contractor may be entitled to an equitable adjustment of time, issued via change order, for delays caused by the following:
- 9.7.2.1.1 Errors, omissions and imperfections in design which the A/E corrects by means of changes in the drawings and specifications.
  - 9.7.2.1.2 Unanticipated physical conditions at the Site which with reasonable diligence could not have been discovered by the Contractor prior to the execution of this Contract and the A/E corrects by means of changes to the drawings and specifications or for which the OR directs changes in the Work identified in the Contract Documents.
  - 9.7.2.1.3 Changes in the Work that effect activities identified in the Contractor's schedule as "critical" to completion of the entire Work, if such changes are ordered by the OR.
  - 9.7.2.1.4 Suspension of Work for convenience of TxDOT, which prevents Contractor from completing the Work within the Contract Time.
- 9.7.3 The Contractor's relief in the event of such delays is the time impact to the critical path as determined by analysis of the Contractor's schedule. In the event that the Contractor incurs additional direct costs because of the delay, they are to be determined pursuant to the provisions of Article 11.
- 9.7.4 A "Weather Day" is a day on which the Contractor's current schedule indicates Work is to be done, and on which inclement weather and related site conditions prevent the Contractor from performing seven (7) continuous hours of Work between the hours of 7:00 a.m. and 6:00 p.m. Weather days are non-compensable delays. When weather conditions at the site prevent work from proceeding, immediately notify the OR and DR for confirmation of the conditions. At the end of each calendar month, submit to the OR, DR and A/E a list of Weather Days occurring in that month along with documentation of the impact on critical activities. Such documentation shall include the impact of any concurrent delay occurring during the "Weather Days" in question. Based on confirmation and concurrence by the OR, any time extension granted will be issued by Change Order as a non-compensable time extension to the Contract
- 9.7.5 Time. If the Contractor and TxDOT cannot agree on the time extension, TxDOT may issue a ULCO for fair and reasonable time extension.
- 9.8 Force Majeure. Force Majeure shall mean any delays, hindrances, or suspensions of the Work for (1) unexpected natural events (sometimes called "acts of God"); (2) strikes, labor disputes, labor shortages, or material shortages outside of the Contractor's reasonable control; (3) acts of public enemy; (4) riots; (5) epidemics disabling the labor force; (6) landslides; (7) earthquakes affecting the Project; (8) fires; (9) hurricanes (10) tornadoes; (11) partial or entire failure of public utilities affecting the Project; (12) delays associated with concealed, unknown, or unforeseen conditions associated with the Property which with reasonable diligence could not have been discovered by the Contractor prior to execution of this Contract; (13) delay in issuing any governmental or regulatory permit, license or approval necessary or required for implementation of the Project which with reasonable diligence could not have been avoided by the Contractor; (14) any other similar cause or event not reasonably within the Contractor's / subcontractor's control and not resulting from their errors, omissions or negligent acts.

- 9.8.1 The Contractor's relief in the event of such Force Majeure delays, hindrances, or suspensions of the Work is the time impact to the critical path as determined by analysis of the Contractor's schedule. Upon review and concurrence of the time impact documentation by the OR a non-compensable time extension to the Contract Time will be issued by Change Order. When such delays, hindrances, or suspensions are the result of the conditions defined under Article 14, Termination By Contractor, the Contractor's relief will be governed by the conditions of Article 14 should the Contract be terminated under said Article.
- 9.9 No Damages for Delay. The Contractor has no claim for monetary damages for delay or hindrances to the work from any cause, including without limitation any act or omission of TxDOT.
- 9.10 Concurrent Delay. When the completion of the Work is simultaneously delayed by an excusable delay and a delay arising from a cause not designated as excusable, the Contractor may not be entitled to a time extension for the period of concurrent delay.
- 9.11 Other Time Extension Requests. Time extensions requested in association with changes to the Work directed or requested by TxDOT shall be included with the Contractor's proposed costs for such change. Time extensions requested for inclement weather are covered by paragraph 9.7.4 above. If the Contractor believes that the completion of the Work is delayed by a circumstance other than for changes directed to the Work or weather, they shall give the OR written notice, stating the nature of the delay and the activities potentially affected, within five (5) calendar days after the onset of the event or circumstance giving rise to the excusable delay. The Contractor shall provide sufficient written evidence to document the delay. In the case of a continuing cause of delay, only one claim is necessary. Claims for extensions of time shall be stated in numbers of whole or half calendar days.
- 9.11.1 Substantiation Time Frame. Within ten (10) calendar days after the cessation of the delay, the Contractor shall formalize its request for extension of time in writing to include a full analysis of the schedule impact of the delay and substantiation of the excusable nature of the delay. All Changes to the Contract Time made as a result of such claim(s) shall be by Change Order, as set forth in Article 11.
- 9.11.2 Duty to Perform. No extension of time releases the Contractor or the Surety furnishing a performance or payment bond or from any obligations under the contract or such a bond. Those obligations remain in full force until the discharge of the Contract.
- 9.11.3 Contents of Time Extension Requests. The Contractor shall provide with each Time Extension Request a quantitative demonstration of the impact of the delay on project completion time, based on the Work Progress Schedule and include with Time Extension Requests a reasonably detailed narrative setting forth:
- 9.11.3.1 The nature of the delay and its cause; the basis of the Contractor's claim of entitlement to a time extension.
- 9.11.3.2 Documentation of the actual impacts of the claimed delay on the critical path indicated in the Contractor's Work Progress Schedule, and any concurrent delays.

- 9.11.3.3 Description and documentation of steps taken by the Contractor to mitigate the effect of the claimed delay, including, when appropriate, the modification of the Work Progress Schedule.
- 9.11.4 TxDOT Response. TxDOT will respond to the Time Extension Request by providing to the Contractor written notice of the number of days granted, if any, and giving its reason if this number differs from the number of days requested by the Contractor.
- 9.11.4.1 TxDOT will not grant time extensions for delays that do not affect the Contract Completion Date.
- 9.11.4.2 TxDOT will respond to each properly submitted Time Extension Request within fifteen (15) calendar days following receipt of all required information. If TxDOT cannot reasonably make a determination about the Contractor's entitlement to a time extension within that time, TxDOT will notify the Contractor in writing. Unless otherwise agreed by the Contractor, TxDOT has no more than fifteen (15) additional calendar days to prepare a final response. If TxDOT fails to respond within forty-five (45) calendar days from the date the Time Extension Request is received, the Contractor is entitled to a time extension in the amount requested.
- 9.12 Failure to Complete Work Within the Contract Time. **TIME IS OF THE ESSENCE OF THIS CONTRACT.** The Contractor's failure to substantially complete the Work within the Contract Time will cause damage to TxDOT. These damages are liquidated by agreement of the Contractor and TxDOT, as set forth in the Contract Documents.
- 9.13 Liquidated Damages. TxDOT may collect Liquidated Damages due from the Contractor directly or indirectly by reducing the contract sum in the amount of Liquidated Damages stated in the Contract Documents.
- 9.13.1 The amount per day given in the following schedule will be deducted from the money due or to become due to the Contractor, not as a penalty, but as liquidated damages and added expense for engineering and administrative supervision.

PER DAY RATE FOR AMOUNT OF ORIGINAL CONTRACT		
Greater Than	Through	Amount Per Calendar Day
\$ 0	\$ 100,000	\$ 570
\$ 100,000	\$ 500,000	\$ 590
\$ 500,000	\$ 1,000,000	\$ 610
\$ 1,000,000	\$ 1,500,000	\$ 685
\$ 1,500,000	\$ 3,000,000	\$ 785
\$ 3,000,000	\$ 5,000,000	\$ 970
\$ 5,000,000	\$ 10,000,000	\$ 1,125
\$ 10,000,000	\$ 20,000,000	\$ 1,285
\$ 20,000,000		\$ 2,590

## Article 10 Payments

- 10.1 Schedule of Values. The Contractor shall submit to the OR and the A/E for acceptance a Schedule of Values accurately itemizing material and labor for the various classifications of the Work based on the organization of the specification sections and using the same activity names and terms as the Work Progress Schedule. The format for the Schedule of Values will be as provided by TxDOT at or before the pre-construction meeting. The accepted Schedule of Values will be the basis for the progress payments under the Contract.
- 10.1.1 No progress payments will be made prior to receipt and acceptance of the Schedule of Values, provided in such detail as required by the OR, and submitted not less than twenty-one calendar (21) days prior to the first request for payment. The Schedule of Values shall follow the order of trade divisions of the specifications and include costs for general conditions, fees, contingencies, and TxDOT allowance items, if applicable, so that the sum of the items will equal the contract price. Each line item will contain labor and material value categories with values assigned as appropriate, the subtotal thereof equaling the value of the work in place when complete.
- 10.2 Texas Identification Number. The Contractor will be required to secure from the Texas Comptroller of Public Accounts, a Texas Payee Identification Number. The Texas Payee Identification Number must correspond to the person(s) or entity shown on the Contract. A valid Texas Payee Identification Number is required prior to payment being processed for this Contract.
- 10.3 Progress Payments. The Contractor will receive periodic progress payments for Work performed, materials in place, suitably stored on site, or as otherwise agreed to by TxDOT and the Contractor. Payment is not due until receipt by the OR or his designee of a correct and complete Pay Application in electronic and/or hard copy format. Progress payments are made provisionally and do not constitute acceptance of work not in accordance with the Contract Documents. TxDOT will not process progress payment applications for Change Order work until all required parties execute the Change Order.
- 10.3.1 Preliminary Pay Worksheet. Once each month that a progress payment is to be requested, the Contractor shall submit to the OR, DR and A/E (submittal can be by fax, e-mail, or other means as agreed between TxDOT and Contractor) a complete, clean copy of a preliminary pay application such that it is received by the OR, DR, and A/E a minimum of seven (7) calendar days prior to the scheduled monthly work progress meeting, and shall include the following:
- 10.3.1.1 The Contractor's estimate of the amount of Work performed, labor furnished and materials incorporated into the Work during the time covered by the application for payment, using the established Schedule of Values and approved form.
- 10.3.1.2 Copies of original invoices for any materials or equipment stored on site but not incorporated into the Work for which the Contractor is requesting payment.
- 10.3.1.3 Insurance certificates, invoices and any other documents required by the Contract Documents for materials or equipment stored off-site for which the Contractor is requesting payment.

- 10.3.1.4 Contractor's Application For Payment reflecting any adjustments to the Contract Sum or Contract Time approved during the period of time covered by the application for payment.
  - 10.3.1.5 An updated Work Progress Schedule including the Executive Summary and all required schedule reports.
  - 10.3.1.6 An updated submittal schedule/register, if required.
  - 10.3.1.7 An updated HUB Subcontracting Plan (HSP) Prime Contractor Progress Assessment Report and associated documentation for any modification to the plan authorized during the time covered by the application for payment.
  - 10.3.1.8 Copy of any apprenticeship or trainee program registered with the United States Department of Labor, Employment and Training Administration if such program is being utilized by Contractor or any Subcontractor in performance of the Work. The Contractor shall provide a copy of any program modifications, updates or additional programs with subsequent applications for payment.
  - 10.3.1.9 Such additional documentation as TxDOT may require as set forth in a Special Condition or elsewhere in the Contract Documents.
- 10.3.2 Contractor's Application for Progress Payment. Subject to the Contractor providing the preliminary pay application within the time frame as set forth in Article 10.3.1 the Contractor, OR, DR and A/E will conduct a conference call review of the preliminary pay application prior to the scheduled monthly work progress meeting. Based on this review, the OR, DR and A/E may require modifications to the preliminary pay application prior to submittal of the formal application for progress payment. The Contractor will submit for approval during the scheduled monthly progress meeting the formal application for progress payment on the appropriate and completed forms reflecting the required modifications. Approval is subject to the condition TxDOT may require modification to the application based on observations of the Work made during the site visit. The Contractor shall promptly make such revisions as necessary for approval. Attach all additional documentation required by the OR and A/E, as well as an affidavit affirming that all payrolls, bills for labor, materials, equipment, subcontracted work and other indebtedness connected with the Contractor's invoice are paid or will be paid within the time specified in Tex. Gov't Code, Chapter 2251. No invoice is complete unless it fully reflects all required modifications and attaches all required documentation including, but not limited to, the following:
- 10.3.2.1 TxDOT's Contractor's Application For Payment;
  - 10.3.2.2 Updated Schedule of Values form;
  - 10.3.2.3 Updated Work Progress Schedule;
  - 10.3.2.4 TxDOT's Contractor's Affidavit Of Payments Of Debts and Claims (monthly);
  - 10.3.2.5 HUB Subcontracting Plan (HSP) Prime Contractor Progress Assessment Report;

- 10.3.2.6 Copies of manufacturer/supplier original invoice price for materials and equipment stored on the site but not incorporated in the Work payment is being requested for; and
  - 10.3.2.7 Copies of warehouse records, receipts and invoices for any materials and equipment stored off site in accordance with Article 10.5 verifying current status of quantities and their disposition.
- 10.4 Owner's Duty to Pay. The Owner has no duty to pay the Contractor except on receipt by the OR of; 1) a complete Contractor's Application For Payment certified by the Contractor, OR, DR and A/E and all attachments, and 2) the Contractor's updated Work Progress Schedule, and 3) confirmation that the Contractor's as-built documentation at the site is kept current.
- 10.4.1 Stored Material. Payment for stored materials and equipment confirmed by the OR, DR, and AE to be on-site or otherwise properly stored but not incorporated into the Work is limited to the manufacturer/supplier original invoice price or the scheduled value for the materials or equipment, whichever is less. Payment for off-site stored materials or equipment is subject to compliance with the provisions of Article 10.6.
  - 10.4.2 Retainage. TxDOT will withhold from each progress payment, as retainage, five (5) percent of the total earned amount, the amount authorized by law, or as otherwise set forth in a Special Condition. Retainage may be managed in conformance with Transportation Code §223.010.
    - 10.4.2.1 The Contractor shall provide written consent of its Surety for any request for release of retainage.
  - 10.4.3 Price Reduction to Cover Loss. TxDOT may reduce any Periodic Invoice, or application for Progress Payment, prior to payment to the extent necessary to protect TxDOT from loss on account of actions of the Contractor including, but not limited to:
    - 10.4.3.1 Defective or incomplete Work not remedied.
    - 10.4.3.2 Damage to Work of a separate Contractor.
    - 10.4.3.3 Failure to maintain scheduled progress or reasonable evidence that the Work will not be completed within the Contract Time.
    - 10.4.3.4 Persistent failure to carry out the Work in accordance with the Contract Documents.
    - 10.4.3.5 Reasonable evidence that the Work cannot be completed for the unpaid portion of the contract sum.
    - 10.4.3.6 Assessment of fines for violations of Prevailing Wage Rate law.
    - 10.4.3.7 Failure to include the appropriate amount of retainage for that periodic progress payment.
    - 10.4.3.8 Failure to maintain acceptable storage/protection for stored materials and equipment on-site and off-site.
  - 10.4.4 Title to Material and Work. Title to all material and Work covered by progress payments transfers to TxDOT upon payment.
    - 10.4.4.1 Transfer of title to TxDOT does not relieve the Contractor of the sole responsibility for the care and protection of materials and Work upon

which payments have been made until final acceptance of the entire Work, or the restoration of any damaged Work, or waive the right of TxDOT to require the fulfillment of all the terms of the Contract.

- 10.5 Continued Obligations. Progress payments to the Contractor do not release the Contractor or its Surety from any obligations under this Contract.
- 10.5.1 Upon TxDOT's request, the Contractor shall furnish manifest proof of the status of Subcontractor's accounts in a form acceptable to TxDOT.
  - 10.5.2 Pay estimate certificates must be signed by a corporate officer or a representative duly authorized by the Contractor.
  - 10.5.3 Contractor shall provide copies of bills of lading, invoices, delivery receipts or other evidence of the location and value of such materials in requesting payment for materials not incorporated in the work.
  - 10.5.4 For purposes of Tex. Gov't Code § 2251.021 (a) (2), the date the performance of service is complete is the date when the Owner's representative approves the final application for payment. The effects of Final Payment are as set forth in Article 12.3.6.
- 10.6 Off-Site Storage. With prior approval by TxDOT and in the event Contractor elects to store materials or equipment at an off-site location, the Contractor shall abide by the following conditions, unless otherwise agreed to in writing by TxDOT and the Contractor.
- 10.6.1 Store materials and equipment in a Bonded Commercial Warehouse.
  - 10.6.2 Provide separate Insurance Coverage adequate not only to cover materials and equipment while in storage, but also in transit from the off-site storage areas to the project site. Copies of duly authenticated Certificates of Insurance, made out to insure TxDOT, must be filed with the Owner's representative.
  - 10.6.3 Inspection by Owner's representative is allowed at any time. TxDOT must be satisfied with the security, control, maintenance, and preservation measures.
  - 10.6.4 Materials and equipment for this project must be physically separated and marked for the project in a sectioned-off area. Only materials and equipment which have been approved through the submittal process are to be considered for payment.
  - 10.6.5 TxDOT reserves the right to reject materials and equipment at any time prior to final acceptance of the complete Contract if they do not meet Contract requirements, regardless of any previous progress payment made.
  - 10.6.6 With each monthly payment estimate, submit a report to the OR, DR and A/E listing the quantities of materials and equipment already paid for and still stored in the off-site location.
  - 10.6.7 Make warehouse records, receipts and invoices available to Owner's representatives, upon request, to verify the quantities and their disposition.
  - 10.6.8 In the event of Contract termination or default by Contractor, the items in storage off-site, upon which payment has been made, will be promptly turned over TxDOT or TxDOT's agents at a location near the jobsite as directed by the OR. The full provisions of PERFORMANCE AND PAYMENT BONDS on this project cover the materials off-site in every respect as though they were stored on the Project Site.

## Article 11 Changes

- 11.1 Change Orders. A Change Order issued after execution of the Contract is a written order to the Contractor, signed by TxDOT in accordance with TxDOT signature authorization policy, the Contractor, and when applicable the Architect/Engineer, authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time can only be changed by Change Order. A Change Order signed by the Contractor indicates his agreement therewith, including the adjustment in the Contract Sum and/or the Contract Time. Subject to compliance with TxDOT signature authorization policy the OR may issue written authorization for the Contractor to proceed with work of a change order in advance of final execution by all parties. Authorization to execute a change order is reserved exclusively to TxDOT and may not be delegated to a private firm under contract with the State.
- 11.1.1 TxDOT, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, and the Contract Sum and the Contract Time will be adjusted accordingly, if required. All such changes in the Work shall be authorized by Change Order, and shall be performed under the applicable conditions of the Contract Documents. If such changes cause an increase or decrease in the Contractor's cost of, or time required for, performance of the Contract, a mutually agreeable, equitable, adjustment shall be made and confirmed in writing in a Change Order.
- 11.1.2 It is recognized by the parties hereto and agreed by them that the specifications and drawings may not be complete or free from errors, omissions and imperfections or that they may require changes or additions in order for the work to be completed to the satisfaction of TxDOT. Accordingly, it is the express intention of the parties, notwithstanding any other provisions in this Contract, that any errors, omissions or imperfections in such specifications and drawings, or any changes in or additions to the specifications and drawings or to the work ordered by TxDOT, and any resulting delays in the work or increases in Contractor's costs and expenses, shall not constitute or give rise to any claim, demand or cause of action of any nature whatsoever in favor of Contractor, whether for breach of contract, *quantum meruit*, or otherwise. TxDOT shall be liable to Contractor for the sum stated to be due Contractor in any Change Order, approved and signed by both parties. It is agreed hereby that such sum, together with any extension of time contained in said Change Order, shall constitute full compensation to Contractor for all costs, expenses and damages to Contractor, whether direct, consequential or otherwise that are incident to, arising out of, or resulting directly or indirectly from the work performed by Contractor under such Change Order.
- 11.1.3 Procedures for administration of Change Orders shall be established by TxDOT and stated in the Contract Documents.
- 11.1.4 Except as provided above, no order, oral statement, or direction from TxDOT or any of its duly appointed representatives shall be treated as a change under this Article or entitle the Contractor to an adjustment.

- 11.1.5 The Contractor agrees that TxDOT and any of its duly authorized representatives shall have access and the right to examine, during normal business hours, any books, documents, papers, and records of the Contractor related to the Project. Further, the Contractor agrees to include this provision in all its subcontracts. The period of access and examination described herein also relates to appeals under the Dispute Resolution Article of the Contract, litigation, or the settlement of claims arising out of the performance of this Contract. The period of access and examination shall continue until final disposition of such claims, appeals or litigation.
- 11.2 Claims for Additional Costs.
- 11.2.1 In order for the Contractor to make a valid claim for an increase in the Contract Sum for unforeseen circumstances, the Contractor shall give TxDOT and the A/E written notice thereof within twenty-one (21) days after the occurrence of the event giving rise to such claim. The Contractor shall not execute any work involving additional cost or time, except in an emergency endangering life or property in which case the Contractor shall act in accordance with Article 7.3. Any TxDOT approved change in the Contract Sum shall be authorized by Change Order. If TxDOT and the Contractor cannot agree on the amount of the adjustment in the Contract Sum, it shall be determined as set forth under Article 15.
- 11.2.2 If the Contractor claims that additional cost is involved because of, but not limited to, 1) any written interpretation of the Contract Documents, 2) any order by TxDOT to stop the Work pursuant to Article 14 where the Contractor was not at fault, 3) any written order for a minor change in the Work issued pursuant to Article 11.3, the Contractor shall make such claim as provided in Article 11.2.1.
- 11.2.3 Failure of the Contractor or his Subcontractors failure to notify the A/E of obvious discrepancies or omissions in the Bid/Proposal Documents during the pre-bid/pre-proposal period, but claim additional costs for corrective work after contract award, shall be deemed an intent to circumvent competitive bidding for necessary corrective work. In such case, TxDOT, in its sole discretion, let a separate contract for the corrective work, or issue a Unilateral Change Order to require performance by the Contractor. Claims for time extensions or for extra cost resulting from delayed notice of contract document discrepancies or omissions will not be considered by TxDOT.
- 11.3 Minor Changes. The OR and the A/E, with concurrence of the OR, will have authority to order minor changes in the Work that do not involve an adjustment in the Contract Sum or an extension of the Contract Time. Such changes shall be effected by written order, i.e. Supplemental Instruction, which the Contractor shall carry out promptly and record on as-built record documents.
- 11.4 Concealed Site Conditions. If, in the performance of the Contract, subsurface, latent or concealed conditions at the site are found to be materially different from the information included in the bid/proposal documents, or if unknown conditions of an unusual nature are disclosed differing materially from the conditions usually inherent in work of the character shown and specified, the OR, DR and A/E shall be notified in writing of such conditions before they are disturbed. Upon such notice, or upon its own observation of such conditions, the A/E, upon the approval of the OR, will promptly make such changes in the Drawings and Specifications as they deem necessary to conform to the different conditions. Any increase or decrease in the cost of the Work, or in the time within which the Work is to be completed,

resulting from such changes will be adjusted by Change Order, subject to TxDOT's approval.

- 11.5 Extension of Time. All Changes to the Contract Time shall be made by Change Order as provided under Article 11.1.
- 11.6 Administration of Change Order Requests. All changes in the Contract shall be administered in accordance with TxDOT's procedures.
  - 11.6.1 Routine Change. Routine changes in the Contract shall be formally initiated by TxDOT with a Change Request form detailing requirements of the proposed change for pricing by the Contractor. This action may be preceded by communications between the Contractor, A/E and OR concerning the need and nature of the change, but such communications shall not constitute a basis for beginning the proposed Work by the Contractor without a Change Order. Except for emergency conditions described below, approval of the Contractor's cost proposal by TxDOT, in compliance with TxDOT's signature authorization policy, will be required for authorization to proceed with the work being changed. TxDOT will not be responsible for the cost of work changed without prior approval and the Contractor may be required to remove such work at no cost to TxDOT.
    - 11.6.1.1 Contractor shall furnish TxDOT an itemized breakdown, in such detail and form as acceptable to TxDOT, of all costs and supporting information including but not limited to quantities, material / equipment prices, tier subcontracted work performed, labor rates and employer payments, compensable insurance and rental rates for all proposed Change Order work. The itemized breakdown detail shall be the same for any Subcontractor work. The Contractor shall follow the outline and organization of the established Schedule of Values to permit analysis using current estimating guides and/or practices by the A/E and OR. Photocopies of Subcontractor and vendor/supplier proposals shall be furnished unless specifically waived in writing by the OR. The Contractor shall provide a written response to TxDOT's Change Order request within fifteen (15) calendar days of receipt unless the Contractor and TxDOT mutually agree otherwise.
  - 11.6.2 Unexpected Circumstance. Any unexpected circumstance which necessitates an immediate change in order to avoid a delay in progress of the Work may be expedited by verbal communication and authorization by TxDOT in compliance with TxDOT's signature authorization policy, with written confirmation following within twenty-four (24) hours. A limited scope not-to-exceed estimate of cost and time will be requested prior to authorizing work to proceed. TxDOT reserves the right to issue a ULCO or Supplemental Instruction when in its sole opinion the circumstance which necessitated the change request could have been reasonably detected by the Contractor in fulfilling its duty to review the Contract Documents as set forth in these Uniform General Conditions.
  - 11.6.3 Emergency Change. Emergency changes to save life or property may be initiated by the Contractor alone (see Article 7.3 - Emergencies) with the claimed cost and/or time of such work to be fully documented as to necessity and detail of the reported costs and/or time to TxDOT's satisfaction.

11.7 Valuation of Change Order Work. The value of changes in the Work, either additive or deductive, executed under a Change Order, shall be determined in one of the following ways:

11.7.1 Lump Sum. By acceptance of a lump sum proposal as described by the following paragraphs.

11.7.1.1 Contractor shall furnish TxDOT an itemized breakdown, in such detail and form as acceptable to TxDOT, of all costs and supporting information including but not limited to quantities, material prices including supplier invoices/quotes, tier subcontracted work performed, labor rates and employer payments, and rental rates. The itemized breakdown detail shall be the same for any Subcontractor work. The Contractor shall furnish TxDOT the following additional information in the itemized breakdown, including insurance charges and bond charges used in computing the lump sum proposal. The information shall also be provided by any Subcontractor work.

11.7.1.2 Cost shall include: Labor cost, including the classifications through foremen when engaged in the actual and direct performance of the work, and actual employer payments to or on behalf of workers for health and welfare, pension, vacation, insurance, and any similar charges imposed by law (Social Security Tax, Workers' Compensation) or required by applicable collective bargaining agreements; materials, installed permanently in the work or expended in performance thereof; rental cost of construction plant and equipment at the work site; energy, fuel, and supplies consumed in operation of power-driven equipment; additional insurance cost, if any, directly resulting from the additional Work, necessary professional design and consulting fees; revisions of previously finalized shop drawings and/or fabrication drawings; and any other costs involved with Change Order work, except those costs listed in 11.7.1.3.

In lieu of providing information for all employer payments to or on behalf of workers, excluding actual gross wages, the Contractor proposal may use a percentage factor based on methodology acceptable to TxDOT, which shall constitute full compensation for all employer payments other than actual gross wages. The Contractor shall provide complete supporting information for calculation of the percentage factor(s) when so requested by TxDOT.

11.7.1.3 Costs shall not include: (These costs shall be considered a part of overhead and profit or markups and no separate allowance will be made therefore) Labor for superintendents, assistant superintendents, office personnel (home and field), timekeepers, and maintenance mechanics at any level of contracting; per diem and travel allowances for any of the aforementioned labor classifications; pieces of equipment, hand and small tools, or instruments having a new value of \$500.00 or less, whether or not consumed by use; safety programs; scheduling; on site and main offices and operating costs; incidental job burdens; modifications to record drawings; guarantee period cost allowances; punch list allowances; and insurance other than mentioned in 11.7.1.2.

11.7.1.4 For work performed by the Contractor's forces, the maximum allowable percentages for overhead and profit on changes will not exceed fifteen percent (15%) if the total of self-performed work is less than or equal to

\$10,000; ten percent (10%) if the total of self-performed work is between \$10,000 and \$20,000; and 7.5 percent (7.5%) if the total of self-performed work is over \$20,000 for any specific change priced.

- 11.7.1.5 For subcontracted Work each affected Subcontractor shall figure its cost, overhead and profit as described above. All subcontractor costs shall be combined, and to that total subcontractor cost the Contractor will be allowed to add a maximum mark-up of ten percent (10%) if the total of all subcontracted work is less than or equal to \$10,000; 7.5 percent (7.5%) if the total of all subcontracted work is between \$10,000 and \$20,000; and five percent (5%) if the total of all subcontracted work is over \$20,000.
- 11.7.1.6 To the total of the above costs, the Contractor will be allowed to add Bond cost, if the change results in an increase in the Bond premium paid by the Contractor. The Contractor shall provide written evidence from the Bonding Company of any increase in the Bond premium to TxDOT. Subcontractors shall be allowed to add Bond cost to their total costs if the changed work results in an increase in the Bond premium paid by the Subcontractor and the Contractor's contract with the Subcontractor requires the Subcontractor to maintain a bond for their Work. The Contractor shall provide a copy of written evidence from the Bonding Company for any additional Subcontractor bond cost that is requested for inclusion in the change order.
- 11.7.2 Unit Price. By acceptance of unit prices named in the Contract or subsequently agreed upon.
  - 11.7.2.1 Unit price is full compensation for all materials, equipment, labor, tools, and supplies necessary to complete the item of work. Unit price includes all markups, overhead, profit, insurance, bond, etc. costs.
- 11.7.3 On lump sum changes involving both additions and deletions, percentages for overhead and profit will be allowed only on the net addition.
- 11.7.4 TxDOT does not accept and will not pay for additional contract cost identified as indirect, consequential, or as damages caused by delay due to Force Majeure or the Contractor.
- 11.7.5 If a Surety has assumed the responsibilities of the Contract, TxDOT may pay the Surety for the completion contractor's profit and overhead, but it will not pay the Surety any profit or overhead.
- 11.8 Contractor Cost Reduction Proposal. The Contractor may submit a cost reduction proposal for changing the requirements of the Contract Documents. The proposal shall demonstrate that changing the Contract requirements would:
  - 1. Represent an advantage to TxDOT over the specified requirement;
  - 2. Result in a net reduction in the total Contract Sum;
  - 3. Not impact any essential function or characteristic of the Work such as safety, service life, reliability, economy of operation, esthetic, ease of maintenance, and necessary standardize features; and
  - 4. Not detrimentally affect the Contract completion date.

All costs for compliance with these requirements, whether accepted or not, shall be borne by the Contractor.

The determination of TxDOT as to acceptability of the proposal will be final and TxDOT may accept in whole or in part any proposal submitted pursuant to this provision by issuing a Change Order that will identify the proposal on which it is based. The Change order will provide for an equitable adjustment in the Contract Sum in accordance with the provisions herein and will revise any other affected provisions of the Contract Documents.

- 11.9 Contractor's Risk of Performance. Except as expressly provided in this Article, other contract provisions or as may be determined by Article 15, the Contractor shall not be entitled to an increase in the Contract Sum or Contract Time and shall bear full responsibility for all risks affecting the Contractor's cost of performance.

## **Article 12 Project Completion and Acceptance**

### 12.1 Closing Inspections

- 12.1.1 Request for Substantial Completion Inspection. When the Contractor considers the entire Work or part thereof Substantially Complete, it shall notify the OR in writing that the Work will be ready for Substantial Completion Inspection on a specific date. The Contractor shall include with this notice the Contractor's Punchlist to indicate that it has previously inspected all the Work associated with the request for inspection; has completed or scheduled items required for Substantial Completion; has corrected other items where possible; and has included all items scheduled for completion or correction prior to final inspection. The failure to include any items on this list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. If any items on this list required for Substantial Completion are not complete or scheduled for completion the Contractor shall not request a Substantial Completion Inspection. If any items on this list prevent use of the building for the purposes it is intended to be utilized and not corrected, the Contractor shall not request a Substantial Completion Inspection. TxDOT and its representatives will review the list of items and schedule the requested inspection, or inform the Contractor in writing that such an inspection is premature because the Work is not sufficiently advanced, items required to be complete or scheduled for completion are not completed, or conditions are not as represented on the Contractor's list.
- 12.1.2 Substantial Completion Inspection. On the date requested by Contractor, or as mutually agreed upon, with consideration of the status of the open items list, the A/E, OR, DR, Contractor and other TxDOT representatives as determined by TxDOT, will jointly attend the Substantial Completion Inspection, which shall be conducted by the OR and A/E or their delegate. If the OR determines that the Work is Substantially Complete, the OR will issue a Certificate of Substantial Completion to be signed by the A/E, TxDOT and Contractor, establishing the date of Substantial Completion. If TxDOT determines the Work is not Substantially Complete the Contractor will be so notified in accordance with other provisions of this Article. The OR and A/E will provide with or independent of this certificate a list of Punchlist items (the Substantial Completion Punchlist) for completion prior to Final Completion Inspection. This list may include items in addition to those on the Contractor's Punchlist, which the inspection team deems necessary to correct or complete prior to Final

Completion Inspection. The term “Substantial Completion Punchlist” items shall mean details of construction and mechanical and electrical adjustments which are minor in character and do not materially interfere with TxDOT’s safe use, enjoyment and operation of the Project or designated portions thereof. If TxDOT elects to occupy the facility upon determination of Substantial Completion, the Contractor shall complete all corrective Work at the convenience of TxDOT, without disruption to TxDOT’s use of the facility for its intended purposes.

- 12.1.3 Requirements for Substantial Completion. The Certificate of Substantial Completion for all or a designated portion of the Work will not be issued if the following items are incomplete, unless otherwise agreed to by TxDOT in writing, as they are considered essential elements of the Project and completion of these is a prerequisite for TxDOT’s safe use, enjoyment and operation of the project or designated portions thereof:
- 12.1.3.1 Complete and accepted operation and maintenance (O&M) manuals for all installed equipment, systems and like items to include, but not be limited to, submittals, shop drawings, operation and maintenance instructions, wiring diagrams, spare parts lists, test/inspection results/reports and written warranties;
  - 12.1.3.2 Verification that training of designated TxDOT personnel for various items of the Work requiring training as set forth in the Contract Documents is complete, as evidenced by submittal of a copy of the “sign in” sheet for each required training session;
  - 12.1.3.3 A notarized affidavit attesting to TxDOT no hazardous materials were incorporated into the Work unless prior written approval of TxDOT was granted, as verified attaching a copy of the TxDOT authorization;
  - 12.1.3.4 A notarized certification to TxDOT that all equipment and materials used in fulfillment of their contract responsibilities are non Asbestos Containing Building Materials (ACBM) in compliance with the Asbestos Hazard Emergency Response Act (AHERA – 40 CRF 763-99 (7));
  - 12.1.3.5 Verification, to the satisfaction of TxDOT, that inspections required by any authority having jurisdiction over any element of the Work have been conducted which shall include any registrations as may be required and the issuance of any permits, licenses, certificates, etc. as may be required for any system or equipment, i.e. boilers, elevators, etc., unless specifically stated otherwise in the Plans and Specifications (The Texas Accessibility Standards (TAS) compliance review and inspection will be the responsibility of the Architect/Engineer and is not a condition for Substantial Completion);
  - 12.1.3.6 Demonstration, to the satisfaction of TxDOT’s authorized representative(s), that all equipment and systems function as required by the Contract Documents, i.e commissioning; and
  - 12.1.3.7 Completion of landscaping as set forth in the Contract Documents.
- 12.1.4 Final Completion Inspection. The Contractor shall complete the list of items identified on the Substantial Completion Punchlist within the time frame specified and prior to requesting a Final Completion Inspection. Unless otherwise specified, directed by TxDOT in writing or otherwise agreed in writing

by the parties, the Contractor shall complete and/or correct all Substantial Completion Punchlist work within thirty (30) calendar days of the Substantial Completion date. Upon completion of the Substantial Completion Punchlist work, the Contractor shall give written notice to the OR and A/E that the Work will be ready for Final Inspection on a specific date. The Contractor shall accompany this notice with a copy of the updated Substantial Completion Punchlist indicating resolution of all items and the original marked-up As-Built drawings reflecting all modifications and changes made to the Work. If the Project is being delivered in phases the original marked-up As-Built drawings shall be delivered at completion of the last phase. On the date specified or as soon thereafter as is practicable, the OR, A/E, DR and the Contractor will inspect the Work. The A/E will submit to TxDOT a Final Punchlist of open items that the inspection team requires corrected or completed before final acceptance of the Work. In the event the time frame set forth in the Certificate of Substantial Completion to complete the Substantial Completion Punchlist Work expires and TxDOT has not been provided written notice from the Contractor that the Work is ready for Final Completion Inspection, and as **TIME IS OF THE ESSENCE IN COMPLETION OF THE WORK**, TxDOT will provide the Contractor written notice of a date specific an inspection will be held. The Contractor, A/E, OR, DR and other TxDOT representatives as determined by TxDOT shall conduct the inspection. If TxDOT determines the Substantial Completion Punchlist Work is not complete and/or corrected, TxDOT shall, without invalidating the Contract, have the right, upon written notice to the Contractor, to complete the Work using duly qualified contractors or TxDOT forces. The Contractor shall reimburse TxDOT for any reasonable costs incurred by TxDOT in completing the Work with offsets and deductions in the Final Payment as provided for in this Article. This provision does not invalidate any other provision in the Contract Documents available to TxDOT for completion and/or correction of the Work.

- 12.1.5 Completed Final Punchlist Inspection. The Contractor shall correct or complete all items on the Final Punchlist before requesting Final Payment. Unless otherwise agreed to in writing by the parties, the Contractor shall complete this work within seven (7) days of receipt of the Final Punchlist and notify the A/E, OR and DR in writing stating the disposition of each Final Punchlist item. The A/E, TxDOT and Contractor shall promptly inspect the completed items. When the Final Punchlist is complete, and the Contract is fully satisfied according to the Contract Documents, subject to the limitations of Article 12.3.9, the OR will issue a certificate establishing the date of Final Completion. Final Completion of all Work is a condition precedent to the Contractor's right to receive Final Payment. In the event the Contractor fails to complete the Final Punchlist items within seven (7) days of receipt of the Final Punchlist or as otherwise agreed to in writing by the parties and as **TIME IS OF THE ESSENCE IN COMPLETION OF THE WORK**, TxDOT shall, without invalidating the Contract, have the right, upon written notice to the Contractor, to complete the Final Punchlist Work using duly qualified contractors or TxDOT forces and the Contractor shall reimburse TxDOT for any reasonable costs incurred by TxDOT in completing the Work with offsets and deductions in the Final Payment as provided for in this Article. This provision does not invalidate any other provision in the Contract Documents available to TxDOT for completion and/or correction of the Work.

- 12.1.6 Annotation. Any Certificate issued under this Article may be annotated to indicate that it is not applicable to specified portions of the Work, or that it is subject to limitation(s) as determined by TxDOT.
- 12.1.7 Purpose of Inspection. Inspection is for determining the completion of the Work, and does not relieve the Contractor of its overall responsibility for completing the Work in a good and workmanlike manner, in compliance with the Contract. Work accepted with incomplete Punchlist items or failure of TxDOT or other parties to identify Work that does not comply with the Contract Documents or is defective in operation or workmanship does not constitute a waiver of TxDOT's rights under the Contract or relieve the Contractor of its responsibility for performance or warranties.
- 12.1.8 Additional Inspections.
- 12.1.8.1 If TxDOT's inspection team determines that the Work is not Substantially Complete at the Substantial Completion Inspection, the OR will provide the Contractor written notice listing cause or causes of the rejection. The OR may set a time for completion of incomplete or defective work. If a new time is set the Contractor shall complete or correct all work so designated prior to requesting a second Substantial Completion Inspection. Nothing in this subsection shall prohibit TxDOT from completing the Work as set forth in other provisions of this Article nor invalidate any provision in the Contract Documents available to TxDOT for completion and/or correction of the Work.
- 12.1.8.2 If TxDOT's inspection team determines that the Work is not complete at the Final Inspection, the OR will provide the Contractor written notice listing the cause or causes of the rejection. The OR may set a time for completion of incomplete or defective work. If a new time is set the Contractor shall complete or correct all work so designated prior to again requesting a Final Inspection. Nothing in this subsection shall prohibit TxDOT from completing the Work as set forth in other provisions of this Article nor invalidate any provision in the Contract Documents available to TxDOT for completion and/or correction of the Work.
- 12.1.8.3 The Contract Agreement contemplates three (3) comprehensive inspections: the Substantial Completion Inspection, the Final Completion Inspection, and the Completed Final Punchlist Inspection. The cost to TxDOT of additional inspections resulting from the Work not being ready for one or more of these inspections shall be charged to the Contractor. TxDOT may issue a Unilateral Change Order deducting these costs from Final Payment. Upon the Contractor's written request, TxDOT will furnish documentation of any costs so deducted. Work added to the Contract by Change Order after the Substantial Completion Inspection is not corrective work for purposes of determining timely completion, or assessing the cost of additional inspections. However, such work shall be subject to all provisions of this Contract.
- 12.1.9 Phased and Whole Completion. The contract may provide, or project conditions may warrant, as determined by the OR, that designated elements or parts of the Work be completed in phases. Where phased completion is

required or specifically agreed to by the parties, the provisions of the Contract related to Closing Inspections and Occupancy apply independently to each designated element or part of the Work. For all other purposes, unless otherwise agreed by the parties in writing, Substantial Completion of the Work as a whole is the date on which the last element or part of the Work completed receives a Substantial Completion certificate. Final Completion of the Work as a whole is the date on which the last element or part of the Work completed receives a Final Completion certificate.

12.1.10 Time Charges. The date Time Charges for the project as a whole terminates will be the date set forth in the Certificate of Substantial Completion for the project issued by TxDOT. When the Work is to be completed in designated elements or portions (phases), time charges for the project will not stop until the date set forth in the Certificate of Substantial Completion for the last phase of the Work issued by TxDOT.

12.2 TxDOT's Right of Occupancy. TxDOT may occupy or use all or any portion of the Work following Substantial Completion, or at any earlier stage of completion. Should TxDOT wish to use or occupy the Work, or part thereof, at or prior to Substantial Completion, the OR will notify the Contractor in writing. Work performed on the premises by third parties on TxDOT's behalf does not constitute occupation or use of the Work by TxDOT for purposes of this Article. All Work performed by the Contractor after occupancy, whether in part or in whole, shall be at the convenience of TxDOT so as to not disrupt TxDOT's use of, or access to occupied areas of the project.

12.3 Acceptance & Payment.

12.3.1 Request for Final Payment. Following the certified completion of all work, including all punch list items, cleanup, and the delivery and approval of record documents, the Contractor shall submit an Application for Final Payment. The Contractor shall include all sums held as retainage and forward the Application for Final Payment to the A/E and the OR for review and approval. If TxDOT determines that any item remains incomplete, including but not be limited to, maintenance and operation manuals, training, guarantees and warranties, record documents and all other items required by the Contract that have not been submitted to and approved by TxDOT, TxDOT may take no action on the Application for Final Payment and return the Application for Final Payment to the Contractor with a list of missing or incomplete items.

12.3.2 Allowances. If the Contract Documents contains allowance items, all savings under any of the designated Allowance Items shall accrue to the benefit of TxDOT and the Contract Sum shall be reduced by one hundred percent (100%) of such savings.

12.3.3 Final Payment Documentation. No Application for Final Payment is complete unless it fully reflects all required modifications and includes all required executed documentation including, but not limited to, the following:

12.3.3.1 TxDOT's Contractor's Application For Payment form;

12.3.3.2 Updated Schedule of Values form;

12.3.3.3 TxDOT's Contractor's Affidavit Of Payments Of Debts and Claims (final) form;

- 12.3.3.4 If requested, documentation establishing payment or satisfaction of all such obligations connected with the work of the Contract, such as receipts, releases and waivers of claims, to the extent and in such form as designated by TxDOT;
  - 12.3.3.5 TxDOT's Consent of Surety Company To Final Payment form;
  - 12.3.3.6 If required, a signed TxDOT Change Order making final adjustment to the Contract Sum or Contract Time as may be required for offsets and deductions, allowance items reconciliation, time adjustments, or any other item requiring a change to the Contract;
  - 12.3.3.7 HUB Subcontracting Plan (HSP) Prime Contractor Progress Assessment Report (See Article 4.5 for Final Report requirement);
  - 12.3.3.8 Buy America form D-9-USA-1 or approved equivalent.
- 12.3.4 TxDOT Approval. The A/E and OR will review a submitted complete Application for Final Payment promptly but in no event later than ten (10) days after its receipt. The OR will either 1) return the Application for Final Payment to Contractor with corrections for action and resubmission or 2) accept it subject to any offsets and deductions, noting approval and forward for payment processing.
- 12.3.5 Offsets and Deductions. TxDOT may deduct from the Final Payment all sums due from the Contractor. If the Certificate of Final Completion notes any Work remaining, incomplete, or defects not remedied, TxDOT may deduct the cost of remedying such deficiencies from the Final Payment. On such deductions, TxDOT will identify each deduction, the amount, and the explanation of the deduction. Such offsets and deductions shall be incorporated via a final Change Order, including Unilateral Change Order as may be applicable.
- 12.3.6 Final Payment Due. Final Payment is due and payable by the Owner, subject to all allowable offsets and deductions, on the 31<sup>st</sup> day following TxDOT receipt of a complete Application for Final Payment. If the Contractor disputes any amount deducted by the TxDOT, the Contractor shall give notice of the dispute on or before the thirtieth (30<sup>th</sup>) day following receipt of Final Payment and Article 15 shall apply to unresolved disputes.
- 12.3.7 Effect of Final Payment (TxDOT). Final Payment, when accepted by the Contractor, constitutes a waiver of all claims by TxDOT, relating to the condition of the Work except those arising from any one, combination or all of the following:
- 12.3.7.1 Faulty or defective Work appearing after Substantial Completion (latent defects);
  - 12.3.7.2 Failure of the Work to comply with the requirements of the Contract Documents;
  - 12.3.7.3 Terms of any warranties required by the Contract, or implied by law;
  - 12.3.7.4 Claims arising from personal injury or property damage to third parties; and
  - 12.3.7.5 Disputes pending under Article 15 that have not been resolved.
- 12.3.8 Effect of Final Payment (Contractor). Acceptance of Final Payment constitutes a waiver of all claims by the Contractor, except those specifically identified in

writing and submitted prior to or at the time of Final Payment and disputes pending under Article 15 that have not been resolved. Provided, however, that the Contract shall not be deemed fully performed and closed until the expiration of all periods of time provided under the Contract Documents or applicable law for the Contractor to submit a claim or protest a Unilateral Change Order (ULCO).

- 12.3.9 Effect on Warranty. Regardless of approval and issuance of Final Payment, the Contract is not deemed fully performed by the Contractor and closed until the expiration of all warranty periods.

## Article 13 Warranty & Guarantee

- 13.1 Contractor's General Warranty and Guarantee. Contractor warrants to TxDOT that all Work is executed in accordance with the Contract, complete in all parts and in accordance with approved practices and customs, and of the best finish and workmanship. The Contractor further warrants that unless otherwise specified, all materials and equipment incorporated in the Work under the Contract are new. TxDOT may, at its option, agree in writing to waive any failure of the Work to conform to the Contract, and to accept a reduction in the Contract Sum for the cost of repair or diminution in value of the Work by reason of such defect. Absent such a written agreement, the Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute and is not waived by any inspection or observation by TxDOT, Architect/Engineer or others, by making any progress payment or final payment, by the use or occupancy of the Work or any portion thereof by TxDOT, at any time, or by any repair or correction of such defect made by TxDOT. All warranties must include statements that the warranty is assignable to the end user, subject to Texas laws and that venue for any legal proceedings under the warranty shall be in a court of competent jurisdiction in the county where the warranted item is incorporated into the Project.
- 13.2 Warranty Period. Except as may be otherwise specified or agreed, the Contractor shall repair all defects in materials, equipment, or workmanship appearing within one year from the date of Substantial Completion of the Work at no cost to TxDOT. If Substantial Completion occurs by phase, then the warranty period for that particular Work begins on the date of completion of the relevant phase, or as otherwise stipulated on the Certificate of Substantial Completion for the particular Work. Regardless of approval and issuance of Final Payment, the Contract is not deemed fully performed by the Contractor and closed until the expiration of all warranty periods.
- 13.3 Limits on Warranty. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
- 13.3.1 Modification or improper maintenance or operation by persons other than Contractor, Subcontractors, or any other individual or entity for whom Contractor is not responsible.
- 13.3.2 Normal wear and tear under normal usage after acceptance of the Work by TxDOT.

- 13.4 Events Not Affecting Warranty. Contractor's obligation to perform and complete the Work in a good and workmanlike manner in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
- 13.4.1 Observations by TxDOT and/or AE.
  - 13.4.2 Recommendation to pay any progress or final payment by OR or A/E.
  - 13.4.3 The issuance of a certificate of Substantial Completion by TxDOT or any payment by Owner to Contractor under the Contract Documents.
  - 13.4.4 Use or occupancy of the Work or any part thereof by TxDOT.
  - 13.4.5 Any acceptance by TxDOT or any failure to do so.
  - 13.4.6 Any review of a Shop Drawing or sample submittal; or
  - 13.4.7 Any inspection, test or approval by others.
  - 13.4.8 Final payment by the Owner.
- 13.5 Separate Warranties. If a particular piece of equipment or component of the Work for which the contract requires a separate warranty is placed in continuous service before Substantial Completion, the Warranty Period for that equipment or component will not begin until Substantial Completion, regardless of any warranty agreements in place between suppliers and/or Subcontractors and the Contractor. The OR will certify the date of service commencement in the Substantial Completion Certificate.
- 13.5.1 In addition to the Contractor's warranty and duty to repair, the Contractor expressly assumes all warranty obligations required under the Contract for specific building components, systems and equipment.
  - 13.5.2 The Contractor may satisfy any such obligation by obtaining and assigning to TxDOT a complying warranty from a manufacturer, supplier, or Subcontractor, provided the warranty provides for assignment to the end user. Where an assigned warranty is tendered to TxDOT but does not fully comply with the requirements of the Contract, the Contractor remains liable to TxDOT on all elements of the required warranty not provided by the tendered warranty.
  - 13.5.3 A complying warranty from a manufacturer, supplier, or Subcontractor assigned to TxDOT by the Contractor shall be subject to and governed by the laws of the State of Texas.
- 13.6 Correction of Defects. Upon receipt of written notice from TxDOT, or any agent of TxDOT designated as responsible for management of the Warranty Period, of the discovery of a defect, the Contractor shall promptly remedy the defect(s), and provide written notice to TxDOT and its designated agent indicating action taken. In case of emergency where delay would cause serious risk of loss or damage to TxDOT, or if the Contractor fails to remedy within thirty (30) days, or within another period agreed to in writing, TxDOT may correct the defect and be reimbursed the cost of remedying the defect from the Contractor or its Surety.
- 13.7 Certification of No Asbestos Containing Materials or Work. The Contractor shall ensure compliance with the Asbestos Hazard Emergency Response Act (AHERA-40 CFR 763-99 (7)) from all subcontractors and materials suppliers, and shall provide a notarized certification to TxDOT that all equipment and materials used in

fulfillment of their contract responsibilities are non Asbestos Containing Building Materials (ACBM). This certification is a condition for Substantial Completion of the Project in whole or in part.

- 13.8 Telecommunications System Warranty Period. . Except as may be otherwise specified or agreed, the Contractor shall repair all defects in materials, equipment, or workmanship appearing within two years from the date of Substantial Completion of the telecommunications system Work at not cost to TxDOT. If Substantial Completion occurs by phase, then the warranty period for the particular telecommunications system Work begins on the date completion of the relevant phase, or as otherwise stipulated on the Certificate of Substantial Completion for the particular Work. Regardless of approval and issuance of Final Payment, the Contract is not deemed fully performed by the Contractor and closed until the expiration of all warranty periods.

## Article 14 Suspension and Termination

- 14.1 Suspension of Work for Cause. TxDOT may, at any time without prior notice, suspend all or any part of the Work, if TxDOT determines it is considered necessary to prevent or correct any condition of the Work, which constitutes an immediate safety hazard, or which is expected to impair the integrity, usefulness or longevity of the Work when completed, or for any reason set forth in any other Article of the Uniform General Conditions.
- 14.1.1 TxDOT will give the Contractor a written notice of suspension for cause, setting forth the reason for the suspension and identifying the work suspended. Upon receipt of such notice, the Contractor shall immediately stop the work so identified. As soon as practicable following the issuance of such a notice, TxDOT will initiate and complete a further investigation of the circumstances giving rise to the suspension, and issue a written determination of the findings.
- 14.1.2 If it is confirmed that the cause was within the control of the Contractor, the Contractor will not be entitled to an extension of time or any compensation for delay resulting from the suspension. If the cause is determined not to have been within the control of the Contractor, and the suspension has prevented the Contractor from completing the Work within the Contract Time, the Contractor may be entitled to a Change Order increasing the Contract Sum and/or extending the Contract Time caused by any such suspension of Work.
- 14.1.3 Suspension of work under this provision will be no longer than is reasonably necessary to identify and remedy the conditions giving rise to the suspension. If TxDOT and the Contractor can not reach agreement on the validity of any work suspension issued by TxDOT or on Contractor's entitlement to an adjustment to the Contract Sum and/or Contract Time such dispute shall be resolved pursuant to the Article 15.
- 14.2 Suspension of Work for TxDOT's Convenience. Upon seven (7) calendar days written notice to the Contractor, TxDOT may at any time without breach of the Contract suspend all or any portion of the Work for a period of up to thirty (30) days for its own convenience. TxDOT will give the Contractor a written notice of suspension for convenience, which sets forth the dates and number of suspension days for the Work, or any portion of it. When such a suspension prevents the

Contractor from completing the Work within the Contract Time, it is an Excusable Delay. A notice of suspension for convenience may be modified by TxDOT at any time on seven (7) calendar days written notice to the Contractor. If TxDOT suspends the Work for its convenience for more than sixty (60) consecutive calendar days, the Contractor may elect to terminate the contract pursuant to the provisions of the contract.

#### 14.3 Termination by TxDOT for Cause.

- 14.3.1 TxDOT may, without prejudice to any right or remedy, terminate the employment of the Contractor and take possession of the site and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor, under any of, but not limited to, the following circumstances:
  - 14.3.1.1 Persistent or repeated failure or refusal, except during complete or partial suspensions of Work authorized under the Contract, to supply enough properly skilled workmen or proper materials to continue prosecution of the Work;
  - 14.3.1.2 Persistent disregard of laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, including the OR;
  - 14.3.1.3 Persistent failure to prosecute the Work in accordance with the Contract, and to insure its completion within the time, or any approved extension thereof, specified in this Contract;
  - 14.3.1.4 Failure to remedy defective work condemned by the OR;
  - 14.3.1.5 Failure to pay subcontractors, laborers, materialmen and suppliers pursuant to Tex. Gov't Code Chapter 2251;
  - 14.3.1.6 Persistent endangerment to the safety of labor or of the Work, including display of uncooperative, disruptive or threatening behavior;
  - 14.3.1.7 Failure to resume the Work that has been discontinued within a reasonable number of days after written notice to do so;
  - 14.3.1.8 Failure to supply or maintain statutory bonds or to maintain required insurance, pursuant to the Contract;
  - 14.3.1.9 Any material breach or substantial violation of a provision of the Contract;
  - 14.3.1.10 The Contractor's insolvency, bankruptcy, or demonstrated financial inability to perform the Work.
- 14.3.2 Should TxDOT decide to terminate the employment of the Contractor under any of the provisions of Article 14.3.1, it will provide to the Contractor and its Surety written notice of the intent to declare the Contractor in default if the Contractor does not proceed as directed within ten (10) days after receipt of the notice.
- 14.3.3 Should the Contractor or its Surety, after having received notice of intent to declare the Contractor in default, demonstrate to the satisfaction of TxDOT within the time frame set forth in the notice, remedy to the condition(s) upon which the notice was based, the notice shall be rescinded in writing by TxDOT. If so rescinded, the Work may continue without an extension of time or any increase in the Contract Sum related directly or indirectly to the remedy.

- 14.3.4 Failure by TxDOT to exercise the right to terminate in any instance or for any proper reason is not a waiver of the right to do so in any other instance or for any other proper reason.
- 14.3.5 If the Contractor or its Surety fails to demonstrate activities to remedy the condition(s) upon which the notice of intent was based, to the satisfaction of TxDOT and within the time frame set forth in the notice following receipt of notice, TxDOT will give written notice to the Contractor and Surety, declare the Contractor to be in default of the Contract, terminate the employment of the Contractor and take possession of the site and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor. TxDOT shall also without violating the Contract, demand the Contractor's Surety complete the remaining Work in accordance with the terms of the original Contract subject to, but not limited to, the following:
  - 14.3.5.1 The Surety becomes the Contractor in a takeover;
  - 14.3.5.2 A completing Contractor will be considered a subcontractor of the Surety;
  - 14.3.5.3 TxDOT reserves the right to approve or reject proposed subcontractors. HUB's must continue to be used in accordance with the commitments previously approved in the HSP by TxDOT;
  - 14.3.5.4 Work may resume after TxDOT receives and approves certificates of insurance as required by the Contract Documents. Certificates of insurance may be issued in the name of the completing Contractor;
  - 14.3.5.5 The Surety is responsible for making every effort to expedite the resumption of the Work and completion of the Contract;
  - 14.3.5.6 The completing Contractor may complete the Work utilizing the materials at the work location it deems suitable and acceptable subject to compliance with the provisions of the Contract Documents;
  - 14.3.5.7 Time charges will continue until completion of the Contract;
  - 14.3.5.8 Any costs incurred by TxDOT including, but not limited to, the cost of additional A/E services, other consultants, contract administration, liquidated damages, and any work or service of any type made necessary by such default or neglect will be the responsibility of the Surety. All costs associated with this work will be deducted from money due to the Surety. If the amount due TxDOT exceeds the sum that would have been payable under the Contract, the Surety will be liable and pay TxDOT the balance of these costs in excess of the Contract Sum. This obligation for payment survives the termination of the Contract.
- 14.3.6 In termination for cause the Contractor may be subject to sanctions under Title 43 Texas Administrative Code Chapter 9, Subchapter G.
- 14.3.7 The Surety's obligation for performance shall survive the termination of the Contract. Should the Surety fail to so demonstrate within thirty (30) days following receipt of termination notice to TxDOT's reasonable satisfaction that the condition or conditions upon which the notice of termination is based have been removed, corrected, or will not recur, TxDOT may, upon written notice to the Surety, arrange for completion of the Work and pursue its legal remedies. TxDOT shall file suite for the cost incurred by TxDOT to complete the Work including, but not limited to, the cost of additional A/E services, other

consultants, contract administration, and any work or service of any type made necessary by such default, corrections to the Work, or neglect.

- 14.3.7.1 In addition to any rights TxDOT may have against the Surety, TxDOT reserves the right in termination for cause to take assignment of any and all contracts between the Surety and its Subcontractors, vendors and suppliers. The OR will promptly notify the Surety of the contracts TxDOT elects to assume. Upon receipt of such notice, the Surety shall promptly take all steps necessary to effect such assignment.
- 14.3.8 If it is determined, after the Contractor is declared in default, that the Contractor was not in default, the rights and obligations of the parties will be the same as if the termination had been issued for the convenience of TxDOT as provided for in the Termination for Convenience of TxDOT provision under this Article.
- 14.4 Termination for Convenience of TxDOT. TxDOT reserves the right, without breach, to terminate the Contract prior to, or during the performance of the Work, for any reason. Upon such an occurrence, the following shall apply:
  - 14.4.1 TxDOT will immediately notify the Contractor and the A/E in writing, specifying the reason for and the effective date of contract termination. Such notice may also contain instructions necessary for the protection, storage or decommissioning of incomplete work or systems, and for safety.
  - 14.4.2 Upon receipt of the notice of termination, the Contractor shall immediately proceed with the following obligations, regardless of any delay in determining or adjusting any amounts due at that point in the Contract:
    - 14.4.2.1 Stop all work.
    - 14.4.2.2 Place no further subcontracts or orders for materials or services.
    - 14.4.2.3 Terminate all subcontracts.
    - 14.4.2.4 Cancel all materials and equipment orders as applicable.
    - 14.4.2.5 Take action that is necessary to protect and preserve all property related to this Contract and materials, equipment and other property which is in the possession of the Contractor and for which TxDOT has paid the Contractor.
  - 14.4.3 When the Contract is terminated for TxDOT's convenience, the Contractor may recover from the Owner payment for all Work executed, including any additional work required pursuant to the notice of termination, and for any provable loss and reasonable expenses attributable to the Work resulting from such termination, but not for anticipated profits after the date of termination.
- 14.5 Termination By Contractor. If the Work is stopped for a period of ninety (90) days under an order of any court or other public authority having jurisdiction, or as a result of an act of government, such as a declaration of a national emergency making materials unavailable, through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing any of the Work under a contract with the Contractor, then the Contractor may, upon thirty (30) additional days' written notice to the OR, terminate the Contract and recover from the Owner payment for all Work previously executed and for any provable loss and reasonable expenses attributable to the Work resulting prior to such termination, but not for anticipated profits after the date of notice by the Contractor.

If the cause of the work stoppage is removed prior to the end of the thirty (30) day notice period, the Contractor may not terminate the Contract.

- 14.6 Settlement on Termination. When the Contract is terminated for any reason, the Contractor shall, at any time prior to sixty (60) days after the effective date of termination, submit a final termination settlement proposal to TxDOT based upon recoverable costs as provided herein. If the Contractor fails to submit the proposal within the time allowed, TxDOT may determine the amount due to the Contractor because of the termination and the Owner will pay the determined amount to the Contractor. All settlements on termination shall be administered as a Change Order.

## Article 15 Dispute Resolution

- 15.1 Contractor Disputes. It is the goal of the Department to have a dispute settled at the District / Office / Division, depending on the type of contract, level prior to elevating it to the Contract Claim Committee.
- 15.2 Unresolved Contractor Disputes. The Alternate Dispute Resolution Process is authorized under Texas Government Code Chapter 2009. The Alternative Dispute Resolution Process shall be used by TxDOT and the Contractor to attempt to resolve any claim made by the Contractor or TxDOT.
- 15.2.1 Contractor Claim. A claim filed by the Contractor shall follow the Contract Claim Procedure as set forth in Texas Administrative Code (TAC) Title 43, Part 1, Chapter 9, Subchapter A, Rule §9.2.
- 15.2.1.1 Only the prime contractor shall submit a claim to begin a claim proceeding.
- 15.2.1.2 The prime contractor shall file a claim only after completion of the contract or when required for orderly performance of the contract.
- 15.2.1.3 The prime contractor shall file a claim no later than one year after the earlier of: the date the Department issues notice to the contractor that it is in default, or the date the Department terminates the contract; or the date the Department issues final acceptance of the Project.
- 15.2.1.4 After a claim proceeding has begun the Department may make a counter claim.
- 15.2.1.5 A claim filed by the prime contractor must be considered by the Contract Claim Committee. After a committee decision is issued, the Contractor can file with the Department's executive director a written petition requesting an administrative hearing.
- 15.2.2 Owner Claim. TAC 43, §9.2 does not abrogate the Owner's authority to file a claim in a court of competent jurisdiction. The procedure for the Owner to file a claim in a court of competent jurisdiction, including the deadline to file a claim, is set by other law.
- 15.3 Condition Precedent to Formal Administrative Hearing. Compliance by the Contractor with TAC 43, §9.3 Contract Claim Procedure is a condition precedent to the filing of a contested case proceeding under Government Code Chapter 2001.

- 15.4 Condition Precedent to Seeking Consent to Sue. Compliance with the contested case process provided in Government Chapter 2001 is a condition precedent to seeking consent to sue from the Legislature under Chapter 107 of the Texas Civil Practices and Remedies Code.
- 15.5 Continued Performance. The pendency of a claim or claims does not authorize any suspension of performance by the Contractor nor relieve the Contractor from any of its obligations, in whole or in part.

## Article 16 Miscellaneous

- 16.1 Special Conditions. When the Work contemplated by TxDOT is of such a character that the foregoing Uniform General Conditions of the Contract cannot adequately cover necessary and additional contractual relationships, the Contract may include Special Conditions as described below:
- 16.1.1 Special Conditions shall relate to a particular project, be peculiar to that project, and may alter or expand any of the Uniform General Conditions.
- 16.2 Federally Funded Projects. On Federally funded projects, TxDOT may waive, suspend or modify any Article in these Uniform General Conditions which conflicts with any Federal statute, rule, regulation or procedure, where such waiver, suspension or modification is essential to receipt by the Owner of such Federal funds for the project. In the case of any project wholly financed by Federal funds, any standards required by the enabling Federal statute, or any Federal rules, regulations or procedures adopted pursuant thereto, shall be controlling.
- 16.3 Standard Specifications. When the Work contemplated by TxDOT requires the use of *Standard Specifications*, as defined in Article 1 of these Uniform General Conditions, for construction of elements of the Work, the Measurement and Payment sections of each *Standard Specifications* Item Number referenced are modified as described below. The term "TxDOT Item Number", if used, shall have the same meaning as *Standard Specifications* Item Number.
- 16.3.1 Measurement. The Measurement section of the *Standard Specifications* Item Number is voided and the Item will be measured on a percentage of Work completed and materials stored corresponding to the Schedule of Values Work classification under which the Item is included.
- 16.3.2 Payment. The Payment section of the *Standard Specifications* Item Number is voided and the payment for the Item will be made on a percentage of Work completed and materials stored corresponding to the Schedule of Values Work classification under which the Item is included.
- 16.4 Personal Liability of Public Officials. TxDOT employees are agents and representatives of the State and will incur no liability, personal or otherwise, in carrying out the provisions of the Contract or in exercising any power or authority granted under the Contract.
- 16.5 Assignment of Contract. The Contractor shall not assign, sell, transfer, or otherwise dispose of the Contract or any portion, rights, title, or interest (including claims) without the approval of the Commission or designated representative. TxDOT must deem any proposed assignment justified and legally acceptable before the assignment may be approved. Any assignment without TxDOT's approval is void.

- 16.6 Buy America. The Contractor shall comply with the latest provisions of Buy America as listed at 23 CFR 635.410. Use steel or iron materials manufactured in the United States except when:
- 16.6.1 The cost of materials, including delivery, does not exceed 0.1% of the total Contract cost or \$2,500, whichever is greater;
  - 16.6.2 The Contract contains an alternate item for a foreign source steel or iron product and the Contract is awarded based on the alternate item; or
  - 16.6.3 The materials are temporarily installed.
  - 16.6.4 The Contractor shall provide a notarized original of FORM D-9-USA-1 with the proper attachments for verification of compliance.

**End of Building Uniform General Conditions as Modified for  
CSJ# 0912-73-222**



# **GALVESTON-BOLIVAR FERRY**

## Technical Specification

Prepared for: TxDOT | Galveston, TX

Ref: 22048-001-832-0

Rev. B

January 31, 2024

## PREPARED BY

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## GENERAL NOTES

1. Taylor Herinckx, TX PE# 120429, is the engineer in responsible charge of the electrical systems. Matthew Wichgers, TX PE# 117647, is the engineer in responsible charge of structural design. Michael Johnson, TX PE# 144778, is the engineer in responsible charge of the machinery systems. Refer to the sealed ABS Reviewed Drawings for a more detailed description of responsible engineer subdivision.
2. Nicholas Bannon, TX PE# 144934 is the engineer in responsible charge of Revision A changes only. Engineers in responsible charge listed in General Note 1 above have been notified of Revision A changes impacting PE oversight from Rev -.

## REVISIONS

REV	DESCRIPTION	DATE	APPROVED
-	Initial Release	05/24/2023	TMH/120429 MJW/117647 MEJ/144778
A	Owner comment incorporation. Inclusion of Appendix A - open comments from ABS design review and special considerations.	01/31/2024	NJB/144934
B	Owner comment and Value Engineering analysis incorporation	9/13/2024	

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## GROUP 000 - GENERAL

### 010 INTENT

It is the intention of this Specification to present a description of the work, materials, and other details which are required for the building of one all welded steel monohull double ended passenger/car/truck ferry for the Texas Department of Transportation (TxDOT). The contractor shall complete all engineering, calculations, and drawings to ensure the completed vessel complies with all the latest applicable requirements of the USCG Subchapter H and the American Bureau of Shipping Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways and other applicable regulatory bodies either listed herein or whose approvals are required for operation of the vessel. The ferry will operate between Galveston, Texas and Bolivar, Texas. The USCG considers this route as protected waters for the existing TxDOT fleet. This is a highly traveled route that demands a high level of dependability with minimal down time.

### 011 PRINCIPAL CHARACTERISTICS AND GENERAL DESCRIPTION

The vessel described in this Specification shall be a double-ended vehicle and passenger ferry to be constructed for TxDOT to be operated from Galveston Island, across the Bolivar Roads to Bolivar Peninsula. The Bolivar end is considered End A and Galveston end is considered End B. All notations of port and starboard reference End A as the bow.

Main propulsion will be supplied by a diesel electric plant at amidships that provides power to an electric Voith Schneider propeller (eVSP) at each end. The ferry also has a lithium-ion battery energy storage system that can power the ferry for 30 minutes without generator operation located at each compartment adjacent to the engine room. The energy storage system shall be designed for optimal operation between generators and batteries.

This vessel shall be constructed using transverse framing with longitudinal girders and 11 watertight compartments. There shall be 10 watertight bulkheads that extend from the bottom shell to the main deck to separate these compartments.

The ferry is to be classed by the American Bureau of Shipping (ABS) ~~A~~A1, Vehicle Passenger Ferry, Harbor Service, River Service, ~~A~~AMS, ESS-LiBattery. The ferry shall also comply with all applicable USCG regulations under 46 CFR Subchapter H: Passenger Vessels.

All equipment, form and function, shall be provided so as to allow for double-ended operation. Where two of any pieces of equipment are required for proper operation of the ferry, even if only one is mentioned in this Specification, that equipment shall be provided by the Contractor.

The principal characteristics of the vessel are as follows in Table 1.

The maximum vessel speed is noted to provide consistency with existing vessels in the TxDOT fleet for operators. Controls shall limit the power output of the propulsion plant to not exceed this speed in fair weather during sea trials (Section 982.5 Sea Trials). TxDOT understands that speeds will be further reduced under adverse weather and/or current.

Table 1: Principal Characteristics

CHARACTERISTIC	VALUE
LOA	293'- 0"
Beam (molded)	66'- 0"
Depth (molded) @ C.L.	16'- 2"
Depth (molded) @ side	16'- 0"
Air Draft Ready to Load	68'- 7"
Draft (mld) Ready to Load	9'-11"
Subdivision draft	11'-0"
Speed, Design Load	12 knots
Maximum Speed	12.5 knots
Light Ship Displacement (estimated)	1,574.7 LT
Subdivision Displacement	2,010.0 LT
Deadweight 8 Tractor Trailers (max)	286 LT
Total Crew	6
Maximum Passengers	495
Maximum Tractor Trailers	8
Maximum Cars	70
Diesel Oil Capacity	6,945 GAL @ 100%
Lube Oil Capacity	1,000 GAL @ 100%
Non-potable Water Capacity	6,100 GAL @ 100%
Generating Capacity Installed	2,456 ekW
Energy Storage Capacity Installed	1,544 kWh
Propulsion	VOITH eVSP 26/162.5 (no endplates)

## 012 DEFINITIONS

The term "Architect" refers to Elliott Bay Design Group, LLC.

The terms "Or Approved Equal", "or equal as approved by TxDOT", "or equal to, as approved", "or equal and approved", "or equal and as approved by TxDOT" shall mean that, only where the Contract Specifications unambiguously permit Contractor to consider an alternate make, model, etc. of specified equipment, TxDOT agrees to consider a substitute product which the Contractor believes to be equal to the specified item. TxDOT shall have the sole authority to determine whether the proposed substitute product is equal to the specified product according to criteria and salient characteristics TxDOT deems reasonable and applicable. Or Equal substitution requests will be evaluated as described in Section 40.3 "Material Substitutions".

The approval of the substitute product by TxDOT shall not relieve the Contractor of sole responsibility for the resolution of any problems, interferences, operational deficiencies, etc. which result from differences between the specified and the substitute product.

The term "as shown on the drawings", as used in these Specifications, means as depicted on the Contract and ABS Reviewed Drawings.

The term "Contract" means the Shipbuilding Contract between TxDOT and the Contractor and includes these Specifications and the accompanying Contract Drawings.

The term "Contractor" means the business entity awarded the Shipbuilding Contract.

The term "Contract Plans" means drawings and other technical data prepared by the Architect that cannot be changed without a change to the Shipbuilding Contract, approved by TxDOT.

The term "ABS Reviewed Drawings" means drawings and other technical data prepared by the Architect that cannot be changed without the written approval of Owner.

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

The terms "good shipbuilding practice" or "standard shipbuilding practice" mean construction to soundly conceived, and engineered detailed working plans, prepared by the Contractor, incorporating the specified components and utilizing recognized shipbuilding construction and testing methods to ensure that the completed vessel conforms to Specification requirements. Inspection by TxDOT's Representative is for the purpose of verifying the proper function of the Contractor's quality assurance measures and is not considered a substitute for in-process control of quality by the Contractor.

The term "iaw" means "in accordance with" and "iwo" means "in way of."

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

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

The term "schematic, schematic diagram or diagram" is a drawing that represents the functional elements of a system using abstract, graphic symbols rather than realistic pictures. It is intended to describe the direction of flow, restrictions, system controls, interfaces with other systems and other information to describe how a system works. The schematic will be laid out in such a way to aid comprehension and not necessarily show the physical relationship between components. Items generally included: key plan, material schedule for pipes, hoses, wires, fittings, valves, protective devices and instrumentation, material specifications, list of major equipment, and standard details.

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

The term "TxDOT" means the Texas Department of Transportation (TxDOT)

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

The term "Regulatory Body" means a Federal or State regulatory agency or an organization that is authorized by the agency to perform delegated regulatory functions on its behalf. Wherever the terms "Classification Society(ies)" or "Regulatory Body(ies)" are used, they are to mean the appropriate ship flag Classification Society and cognizant national maritime authorities which have rules or regulations which shall be applied to a vessel of this type, service, flag state and size.

The term "vessel" means the ferry.

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

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

The term "working plans, Contractor prepared working plans" shall be prepared with standard shipbuilding practice as required for the detail design of the ferry. Working plans shall be of sufficient detail for detailed weight estimating and construction. They shall provide specifically detailed material and equipment selections, as well as unit and system weights.

## 013 ACRONYMS

ABS	American Bureau of Shipping
AGMA	American Gear Manufacturer's Association
AISI	American Iron and Steel Institute
AMCA	Air Movement and Control Association
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
CFR	Code of Federal Regulations
CRES	Corrosion Resistant Steel, of suitable grade for marine use
DVTP	Design Verification Test Procedures
EDG	Emergency Diesel Generator
EPA	Environmental Protection Agency
eVSP	Electric Voith Schneider Propeller
FCC	Federal Communications Commission
FMEA	Failure Modes and Effects Analysis
IEEE	Institute of Electrical and Electronics Engineers
IES	Illumination Engineering Society
MCR	Maximum Continuous Rating
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association

NFP(A)	National Fluid Power Association
NPS	National Pipe Schedule
NVIC	Navigation and Vessel Inspection Circular, issued by the USCG
OSHA	Occupational Safety and Health Administration
PSTP	Periodic Safety Test Procedures
QAWT	Quick acting watertight
QFA	Qualitative failure Analysis
RFI	Request for Information
SNAME	Society of Naval Architects and Marine Engineers
SSPC	Steel Structures Painting Council
TxDOT	Texas Department of Transportation
USCG	United States Coast Guard
USPHS	United States Public Health Service, U.S. Department of Health and Human Services
USSG	United States Standard Gage
72 COLREGS	The International Regulations for Preventing Collision at Sea, 1972

### 030 CONTRACT DRAWINGS AND ABS REVIEWED DRAWINGS

The following drawings shall be used in conjunction with these Specifications in order to define the functionality of the vessel. The vessel shall be built in accordance with this Specification and the drawings listed below while the Contract is the most senior document. Approvals shall be obtained with TxDOT review and approval prior to any production. Any departure from these drawings must be specifically approved by TxDOT. The drawings listed below are intended to supplement the Specification. Items contained in one but excluded from the other, are intended to be provided and installed by the Contractor. The Contractor is Responsible to utilize "Out-of-Office" Naval Architects to complete all engineering, calculations, and Regulatory Body Approvals. The Contractor is responsible for sub-contractors to meet the Contract requirements.

The shape of the hull shall conform to the Lines Plan and all lines shall be carefully faired. With the exception of fairing, the Lines Plan shall not be deviated from without prior written consent from TxDOT.

All working drawings and yard detail design production drawings shall be submitted to TxDOT or their Representatives for review prior to construction. TxDOT's approval of any working drawings or detail design drawings does not represent an approval to deviate from this Specification and drawings. Any work deviating from this document and its drawings that is performed in advance of receiving approval by TxDOT shall be at the Contractor's own risk. Only if TxDOT is notified of the deviation affecting all parts of this Specification and approval has been given shall give way to proceeding with this deviation.

System schematics and drawings developed below are diagrammatic and are not intended to represent the detailed equipment locations, pipe runs, or arrangements. System components shall be located so that proper clearance for operation and conducting maintenance can be performed. The Contractor shall further develop these systems and perform an interference survey with all components.

The Supporting Documents were developed with and in support of the ABS Reviewed Drawings. Any calculations provided therein support the Contract Design. As the Contractor develops the Detail Design, the Contractor shall develop, update, or verify the supporting calculations as necessary. Contractor shall develop supporting calculations and documents independently of the TxDOT contract design package

Supporting Documents. TxDOT Supporting Documents may be provided at an appropriate time to enable comparison and development of the Contractor's detailed design, at TxDOT's discretion.

The Contractor is cautioned to review all dimensions and sizes from manufacturers certified drawings prior to installation. It is also recommended to check the actual equipment and machinery itself to verify all clearances and avoid any interferences. All large or crucial deviations in clearances or noticeable interferences should be brought to the attention of TxDOT or their Representative and resident engineer for further review. Engineering and production costs caused by changes in machinery and/or equipment will be the Contractor's sole responsibility.

The Contractor shall use the following reference drawings as guidance in the proper detail design engineering of the vessel.

*Table 2: ABS Reviewed Drawings*

REFERENCE ID	DOCUMENT NUMBER	TITLE
(A)	22048-001-101.0	Profile & Arrangements
(B)	22048-001-101.1	Pilothouse Arrangement & Control Station Details
(C)	22048-001-101.3	Machinery Arrangement
(D)	22048-001-101.6	ADA Head Schematic and Arrangement
(E)	22048-001-101.7	Engineers Observation Station Arrangement
(F)	22048-001-110.0	Hull Scantling Plans
(G)	22048-001-110.1	Typical Hull Sections
(H)	22048-001-110.2	Structural Inboard Profile
(I)	22048-001-110.4	Shell Plate Expansion
(J)	22048-001-110.6	Engineers Observation Station Structure
(K)	22048-001-110.7	Energy Storage Space Structure
(L)	22048-001-111.0	Bulwarks & Misc. Structure
(M)	22048-001-151.0	Deckhouse Structure
(N)	22048-001-167.0	Hatches & Manholes
(O)	22048-001-167.1	Hull Openings Schedule
(P)	22048-001-169.0	Structural Penetrations
(Q)	22048-001-171.0	Navigation Mast Details
(R)	22048-001-182.0	Propulsion Foundation Details
(S)	22048-001-191.0	Fixed Ballast
(T)	22048-001-256.0	Fresh Water-Cooling System Schematic & Arrgt.
(U)	22048-001-259.0	Exhaust System Arrangement
(V)	22048-001-261.0	Fuel Oil Arrangement & Schematic
(W)	22048-001-262-0	Lube Oil Arrangement Schematic
(X)	22048-001-300-0	Electrical One Line Diagram
(Y)	22048-001-300-2	24 VDC System One Line Diagram
(Z)	22048-001-300-3	Electrical Equipment Layout
(AA)	22048-001-330-0	Lighting & Receptacle Plan
(BB)	22048-001-339-0	Wireways and Cableways
(CC)	22048-001-420-0	Navigation Lights Arrangement
(DD)	22048-001-423-2	Transducer Arrangement
(EE)	22048-001-430-0	Sound Powered Phone System

REFERENCE ID	DOCUMENT NUMBER	TITLE
(FF)	22048-001-430-1	General Alarm System
(GG)	22048-001-430-2	GAI-Tronics System
(HH)	22048-001-430-3	Security Cameras
(II)	22048-001-506-0	Vents, Fills, and Sounds
(JJ)	22048-001-513-0	Machinery Space Ventilation
(KK)	22048-001-514-0	HVAC Schematic Deckhouse, EOS, & ESS
(LL)	22048-001-521-0	Firemain System Schematic & Arrangement
(MM)	22048-001-524-0	Raw Water System Schematic & Arrangement
(NN)	22048-001-526-0	Deck Drains Arrangement
(OO)	22048-001-528-0	Sewage System Schematic and Arrangement
(PP)	22048-001-529-0	Bilge System Arrangement
(QQ)	22048-001-533-0	Non-Potable Water Schematic
(RR)	22048-001-544-0	Independent Tank Details
(SS)	22048-001-551-0	Compressed Air Arrangement and Schematic
(TT)	22048-001-555-0	Fixed Fire Fighting System
(UU)	22048-001-581-0	Anchor and Mooring Plan
(VV)	22048-001-581-1	Anchor Handling and Stowage System Details
(WW)	22048-001-583-0	Boat Handling and Stowage System
(XX)	22048-001-583-1	Life Saving Equipment and Evacuation Zone Arrgt.
(YY)	22048-001-584-0	Barrier Gate Details
(ZZ)	22048-001-584-1	Barrier Gate Hydraulics
(AAA)	22048-001-601-0	Lines Plan
(BBB)	22048-001-601-1	Fire & Safety Plan
(CCC)	22048-001-601-2	Fire Boundary Plan
(DDD)	22048-001-601-3	Fire Detection Arrangement
(EEE)	22048-001-602-0	Hull Markings Arrangement
(FFF)	22048-001-602-1	Deck Marking Detail
(GGG)	22048-001-602-2	Misc. Sign Arrangement
(HHH)	22048-001-623-0	Deckhouse Stairways and Ladder Arrgt.
(III)	22048-001-623-1	Hull Stairway and Ladder Arrgt.
(JJJ)	22048-001-623-2	Grating and Deck Plating Arrgt.
(KKK)	22048-001-625-1	Deckhouse Opening Schedule
(LLL)	22048-001-625-2	Deckhouse Window Detail
(MMM)	22048-001-633-0	Drydocking and Cathodic Protection Arrgt.
(NNN)	22048-001-635-0	Joinery & Ceiling Detail, Sheathing, & Insulation
(OOO)	22048-001-810.1	Weld Schedule
(PPP)	22048-001-835-1	Tonnage Calculations

Table 3: Supporting Documents

REFERENCE ID	DOCUMENT NUMBER	TITLE
(QQQ)	22048-001-061-0	Scantling Calculations
(RRR)	22048-001-064-0	Piping System and Mechanical Calculations
(SSS)	22048-001-300-1	Ship Service Electrical Load Analysis

(TTT)	22048-001-833-0	Weight Estimate
(UUU)	22048-001-843-5	Stability Assessment
(VVV)	22048-001-843-8	Longitudinal Strength Assessment

SIEMENS ENERGY, BLUE DRIVE PLUS ENERGY STORAGE AND PROPULSION CONTROL REFERENCES

- Siemens Energy proposal for Texas Department of Transportation (TxDOT) TX DOT New Build 2, Prop # SF221987605, Rev 02, May 09, 2023
- Siemens, BlueVault Energy Storage, Battery Room Requirements, STD-08-01-P006, Rev. B, Dec 01, 2020

VOITH SCHNEIDER PROPELLER REFERENCES

- eVoith Shneider Propeller, eVSP CRYSTAL II, Technical Specification, Version 01, May 23, 2023
- eVSP Main Dimension, 1822360821000
- Pipe Connecting Plan, 3182-000995
- Hydraulic Circuit Diagram, 3182-000347
- Oil Drain Service and Oil Filling, 3182-001307
- Elevated Lube Oil Tank, 1822160931000
- Rotor Space Ventilation, 1822024931300
- Compressor Sys, 3182-002801
- Hydraulic Power Pack, 3182-002926
- eVSP Power Supply, 1822361381000

A drawing identified as "Contract Drawing", which delineates mandatory design features of the vessel. Minor rearrangements ( $\pm 6$  inches for nonstructural bulkheads,  $\pm 9$  inches for accesses and  $\pm 12$  inches for equipment and furniture and other components within a space) may be made to clear interferences or accommodate changes in sizes of those components, provided that operability, maintainability, human-machine interfaces, and service envelopes are not adversely affected. Other departures from the details of a Contract drawing will be considered but must be submitted for approval.

A drawing identified as "ABS Reviewed Drawing" illustrates general design features of the vessel. An ABS Reviewed Drawing does not necessarily depict, nor is it intended that it depict, all features and details of the systems and structures to which it relates. The Contractor is responsible for reviewing ABS Reviewed Drawings and making its own determination of the accuracy, completeness, or suitability for use of any ABS Reviewed Drawing which it desires to use pursuant to its performance of this Contract. ABS Reviewed Drawings will not necessarily be updated or revised to reflect future modification or changes to these Specifications.

The ABS Reviewed Drawings have been reviewed under the scope of pre-construction design review by ABS. As such, review comments exist that require close-out by the Contractor. Appendix A summarizes the remaining open comments in addition to a proposed path forward to resolution for each comment. The Contractor shall resolve these comments with ABS and obtain all necessary alternative compliance from USCG prior to construction.

In the event there are any errors or omissions in this Specification or in the accompanying plans that would affect the construction of a complete and seaworthy vessel, in accordance with standard ship

building practice, the Contractor shall correct such errors or omissions as a part of the Contract work with no increases in Contract price or time of completion.

Details which are not mentioned in this Specification, but which according to Regulatory Body requirements are essential for a vessel of this type, shall be furnished in accordance with the Contractor's practice.

In the event that there should exist any conflict, inconsistencies, or contradiction or there should be any doubt as to the interpretations between the plans and the Specification, an RFI shall be submitted to TxDOT for clarification. Likewise, in the event of conflicts, inconsistencies, or contradictions between the plans or the Specification and the Contract, an RFI shall be submitted to TxDOT for clarification.

Where requirements of the Contract Drawings and/or these Specifications are in excess of Regulatory Body requirements, the Contract Drawings and/or these Specifications shall prevail. This includes all special construction considerations, including but not limited to: crew room escape, fire boundaries and vertical zones, Engineer's Observation Station, hazardous zones, quick acting watertight doors, and stairways.

Unless specifically stated otherwise in the Contract, work in excess of the Contract Drawings and these Specifications, which is required by any Regulatory Body requirement, law, or change in any existing Regulatory Body requirement or law, shall be included in the Contract work and Contract price if such requirement or change was published and effective 30 days prior to the date of execution of the Contract (in the case of a negotiated Contract), or 30 days prior to bid opening (in the case of a competitive bid Contract). When any such new requirement or change in an existing requirement is published prior to the preceding date but becomes effective after such date, work required by the new requirement or change shall also be included in the Contract work and Contract price if: (1) the publication occurs prior to the preceding date, (2) the effective date of the new requirement or change occurs before the actual delivery date of the vessel, or (3) compliance with such new requirement or change is necessary to obtain the approval of any Regulatory Body.

## 040 ADMINISTRATIVE REQUIREMENTS

### 040.1 MASTER CONSTRUCTION SCHEDULE

Within twenty (20) calendar days after execution of the Contract, submit to TxDOT, four (4) preliminary copies of a complete Master Construction Schedule showing the Contractor's plan and construction sequence proposed to accomplish the work within the Contract period. TxDOT will review this document, comment, return a marked up copy within ten (10) working days to the Contractor, and then meet with the Contractor to discuss the comments. The Contractor shall schedule the review meeting to be held within ten (10) working days after receipt of TxDOT's comments. The Master Construction Schedule shall be updated by the Contractor within two (2) working days after the review meeting, and then resubmitted to TxDOT for final approval as the working document.

The Master Construction Schedule shall sequence and schedule all work detailed in the Contract Documents, in accordance with the generally accepted practices for project management. The Master Construction Schedule shall be a time-phased/resource loaded Gantt Bar Chart. The Contractor shall decompose the activities indicated in the Contract Documents, down to a sufficient number of discreet tasks, to adequately control and monitor the work and to clearly report progress for the duration of the

project. Indicate, by table or directly on the Gantt Bar Chart, the start and stop dates, free float, and total float for each task. Indicate, by table or by link lines, all predecessor and successor dependencies for each task. Develop and clearly indicate the critical path through the project.

The Contractor shall schedule and chair a monthly progress meeting, starting the first week, with the TxDOT Representative, TxDOT Consultant, and the Contractor's key production persons. The Contractor shall provide four (4) copies of an updated Master Construction Schedule and a progress report (expressed as a percentage of work complete) by Activity in a tabular form, and a list of completed milestones. The updated Master Construction Schedule shall reflect opened items, additional work, deleted work, and modifications, in addition to work progress and completions. In the last 90 calendar days of the scheduled performance period, the Contractor shall additionally prepare and submit an Open Task Report. The Contractor shall update and submit the Open Task Report at each subsequent progress meeting, and then daily starting the 1st day of the last thirty (30) calendar days of the scheduled performance period.

The Master Construction Schedule shall additionally indicate the starting and completion dates for the following items:

- a) The Contract award date.
- b) Commencement and completion of engineering.
- c) Regulatory body submittal dates for calculations and drawings.
- d) Long lead time purchase order submittals. Anticipated date of delivery of all long lead time equipment and components and all major equipment.
- e) Construction of the main hull erection jig.
- f) Prefabrication, fabrication, assembly, and erection of all structural components.
- g) Installation of major machinery components and packaged subassemblies: Piping, propulsors, mechanical, electrical, ventilating, coating, and outfitting systems installation.
- h) Builder's trials
- i) Dock trials.
- j) Sea trials.
- k) Operational Trials.
- l) Delivery of the vessel to TxDOT.
- m) Local Certificate of Inspection and Acceptance Trials.
- n) TxDOT's acceptance of the Vessel.
- o) Start, duration and completion of all significant task items.
- p) Anticipated date of all items described in this Specification as for TxDOT Representative's Review or Approval.
- q) Milestone dates for each of the progress payment submittals per the Special Provisions Section of the Contract Specification.
- r) Buy America Documentation.

## 040.2 PLAN SCHEDULE

Within twenty (20) calendar days after execution of the Contract, the Contractor shall submit a plan schedule of working drawings for approval by TxDOT Representative. The Plan Schedule shall list all drawings and documents required for submittal in this Specification and ABS Reviewed Drawings and as required for all regulatory and class approval requirements. The schedule shall be submitted as a paper copy and as an Excel spreadsheet. The schedule shall include the following:

- a) A drawing number for each drawing listed
- b) The drawing title
- c) The scheduled date the drawing will be submitted by the Contractor for approval to TxDOT.
- d) The scheduled date the drawing will be submitted by the Contractor for approval by the regulatory agencies
- e) Columns for recording the actual date of the initial submittal, the dates for approvals, and a column showing the current letter revision of each drawing
- f) A list of drawings prepared by all subcontractors and vendors

The Contractor shall revise and submit the schedule by the first of each month to show all changes, progress, and delays. Upon completion of the vessel, and prior to delivery to TxDOT, the Contractor shall furnish a final copy of this schedule to the TxDOT Representative.

### 040.3 MATERIAL SUBSTITUTIONS

Names of certain manufacturers and items, where mentioned in this Specification and on the Drawings as a means of describing the general character of the quality, design, and construction of the various items and articles, shall be understood as meaning the TxDOT's preference Substitutions for such items must be of equivalent quality and must be approved by TxDOT in writing.

An "or equal" product or material is one which exhibits the same general size, weight, characteristics, performance, reliability, and maintainability as the product or material identified in the Specification. The Contractor shall be wholly responsible for demonstrating the "or equal" status of any product or material, which is offered as a substitute for those cited in the Specification. Requests for substitutions shall be made in writing to TxDOT, setting forth the reason for the proposed substitution and providing documented evidence of the substitute's equivalence or superiority to the specified product or material. The request shall also provide the Contractor's assurance that the substitution, if approved, will not result in any increase in the Contract Price nor an extension of the delivery date of the vessel.

Requests for substitutions must include in writing:

- Comprehensive comparison of construction features and materials between the specified item and the proposed item. Complete drawings and dimensional data shall be submitted for each item. The weight of each item will be provided.
- Comprehensive comparison of operational/performance characteristics between the specified item and the proposed item. Including, but not limited to:
  - Operational characteristics at design conditions
  - Electrical or energy consumption
  - Operating efficiency
  - Maintenance requirements
  - Mean time between failures
- Comprehensive list of impacts that the substitution will cause to arrangements, structure and interfacing of piping, ventilation, electrical, and control systems.
- Classification and/or regulatory agency approval.
- Valid manufacturers price quote for the specified and the proposed substitute item.
- Comparison of manufacturer's warranty between the specified item and the proposed substitute item.

- Proximity of manufacturer's authorized distributor to Houston TxDOT area that is stocking parts for the items and providing field service for the proposed substitution and the specified item.
- Proven maritime service for at least three years in saltwater environment.
- Statement from Contractor indicating that the proposed substitution will not be a cost increase and will not extend the delivery date of the vessel.

Incomplete substitution requests will not be considered.

Substitutions will be considered if based upon Contractor preference or familiarity with an item or equipment, provided it can be demonstrated that the item is equal (as defined above) to or better than the specified item. Substitutions for specified items that have been discontinued shall be for the current equivalent or better item from the same manufacturer.

Substitutions will not be considered based upon cost savings alone. For each substitution proposed, a valid price quote shall be obtained by the Contractor from the manufacturer of the specified item and the proposed substitution. If the substitution is approved, any such cost savings will be subject to a change order providing a credit for the full difference to TxDOT.

Substitutions for more expensive items will only be considered if they are a no cost change to TxDOT.

TxDOT shall furnish the Contractor with written approval or disapproval of proposed product substitutions, or written notice of any additional time required by TxDOT to complete evaluation of the Contractor's proposal within ten (10) working days of TxDOT's receipt of the Contractor's complete written product substitution proposal. TxDOT's decision will be final. Where an item is required to be submitted for approval, work shall not proceed until notification of approval is received.

The Contractor shall be responsible for all engineering costs and construction costs associated with any substitutions.

#### 040.4 PURCHASE TECHNICAL SPECIFICATIONS, REQUISITIONS, AND PURCHASE ORDERS

The Contractor shall submit all purchase (technical) specifications, requisitions, purchase orders, or similar descriptive data for approval by TxDOT prior to purchasing equipment. Each document shall contain a full technical description of the material to be ordered. If the Contractor wishes to purchase or supply equipment, fittings, or outfit other than that specified, he/she shall first inform TxDOT of the details of his/her intended purchase, and secure specific written approval in each such instance.

Purchase orders to include requirements for vendor System Diagrams, Training, Instruction Books, Operating Manuals, and Technical Data Sheets, Software, and other technical information as described in Group 800.

Furnish a copy of all correspondence and technical data affecting design features of vendor items along with the submittal of the drawings showing these items.

#### 040.5 BUY AMERICA COMPLIANCE

This is a Federal Highway Administration (FHWA) funded project. Source of supply and quality of materials shall comply with TxDOT requirements, which mandate compliance with 23 CFR 635.410 (Buy America requirements) for federal aid highway projects.

In accordance with 23 CFR 635.410, a nationwide waiver has been granted for certain ferryboat equipment and machinery items: marine diesel engines, electrical switchboards and switch gear, fittings, electric motors, pumps, ventilation fans, boilers, electrical controls, and electronic equipment. Items not specifically included in the waiver remain subject to the Buy America requirements. While waivers may be requested for other items, the basis of successful waiver applications is the non-availability of a functionally equivalent and serviceable product in which all steel and iron is of wholly US origin. Any waiver request must be submitted by TxDOT; therefore, the Contractor must apply to TxDOT to make a waiver application on their behalf. Any delay associated with any waiver application is the sole responsibility of the Contractor and is not grounds for additional time or receipt of additional payment.

The Contractor shall be responsible for ensuring that its subcontractors comply with these requirements.

The Contractor shall monitor Buy America compliance throughout the duration of the Contract. The Contractor shall provide monthly updates of Buy America certification, including detailed, current status of contract percentages. Form 1818 (D-9-USA-1) shall be submitted by the Contractor for all materials required to be Buy America compliant.

## 070 REQUIREMENTS FOR DESIGN AND CONSTRUCTION

The vessel shall be constructed in compliance with all applicable requirements of the flag state, Classification Society and Regulatory Bodies. In addition, the vessel shall meet the most recent issues including all amendments to the following rules and regulations:

- 46 CFR USCG Subchapter H – Passenger Vessels.
- American Bureau of Shipping – Rules for Building and Classing Steel Ships for Service on Rivers and Intracoastal Waterways.
- American Bureau of Shipping – Use of Lithium Batteries in the Marine and Offshore Industries.
- USPHS Publication No. 393 – Handbook on Sanitation of Ship Construction.
- Navigation Rules International – Inland (COMDTINST M16672).
- IEEE-45 – Recommended Practice for Electric Installations on Shipboard.
- USCG NVIC 12-82 – Recommendations on Control of Excessive Noise.
- EC 60092 – Electrical Installations in Ships (lighting) .
- Underwriter’s Laboratories, Inc – Applicable Standards for Marine Electrical Equipment and Lighting Fixtures.
- Federal Communications Commission.
- USCG – Regulatory Admeasurement Rules.
- ASTM F1321 – Standard Guide for Conducting a Stability Test to Determine the Light Ship Displacement and Centers of Gravity of a Ship.
- ASTM F1166 – Standard Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities.
- US EPA Tier 3 – Exhaust Emission Standards for Category I Marine Diesel Engines.
- OSHA Safety and Health Standards – Shipbuilding.
- Department of Justice Regulations of 28 CFR Part 36 (Americans with Disabilities Act), and the “Americans with Disabilities Act Handbook.”
- ISO 2923, "Acoustics - Measurement of Noise on Board Ships."

- ISO 6954, "Mechanical Vibration and Shock - Guidelines for the Overall Evaluation of Vibration in Merchant Ships.
- IACS No. 47 Shipbuilding and Repair Quality Standard.
- AWS D1.1 – Structural Welding Code – Steel.

Machinery, structure, and outfit shall be designed to withstand the resultant forces from the following conditions of service environment:

- Permanent list of 10 degrees
- Permanent trim of 5 degrees
- Double amplitude roll of 30 degrees in a period of 10 seconds
- Double amplitude pitch of 10 degrees in a period of 5 seconds

Worst case ambient air and seawater temperatures as tabulated below.

PARAMETER	UNITS	SUMMER	WINTER
Air Temperature (dry bulb)	(deg F)	95	25
Seawater Temp	(deg F)	92	35

All necessary certificates and documents covering approval of the vessel shall be obtained by the Contractor at his/her expense and furnished to TxDOT. All certificates shall come into effect no more than 30 days prior to the delivery of the vessel.

Consideration shall be given to equipment differing in detail from that described herein provided the difference(s) shall not impair the efficiency, timeliness, reliability or durability of the equipment and its suitability for the vessel.

Where a specific manufacturer or model of equipment is identified in this Specification, it signifies TxDOT’s preference for reasons of commonality with existing equipment and spares, or familiarity for purposes of maintenance and operation. The Contractor may substitute equal equipment only with prior approval of TxDOT.

The Contractor has sole responsibility for demonstrating the “or equal” status of any item of equipment offered as a substitute for that identified in this Specification. Substitute articles of a nature similar in design and equal in quality, construction, endurance, corrosion resistance, performance, and ease of maintenance, may be submitted to TxDOT for consideration. See Section 040.3. Prospective suppliers must submit evidence of the successful application of their product and of its suitability for marine service.

All equipment shall have support and service available from a reliable and established agent of the manufacturer or vendor, local to the operating area of TxDOT. Wherever possible, equipment shall have a successful history in marine applications.

Where alternate materials, systems, methods, or manufacturers are mentioned in these Specifications, it is intended that the selection be made by the Contractor. Where “required” or “as required” appear without further definition it is intended to mean the requirements of any cognizant regulatory agency.

Equipment intended for installation on the vessel described by this Specification shall be procured by the Contractor in accordance with the requirements of the Buy America Act.

## 071 ACCESS AND HEADROOM

The structure and layout of the machinery and equipment shall be designed and constructed to permit ready access to all parts for operation, inspection, maintenance, and repair with minimum disturbance of other structure or equipment.

Restriction of access openings by pipes, valves, and heating coils shall be avoided. Ladders shall be installed in line with openings. All access openings shall be large enough to facilitate servicing of contents as practical. All areas of all spaces within the vessel shall be accessible.

Provisions shall be made for the removal of items such as machinery parts. These provisions may consist of areas of decks and bulkheads so arranged that when a section so designated on working drawings is removed, the remaining structure will be self-supporting.

Bolted access panels shall be installed in the deckhouse structure for maintenance access to the exhaust casings, electrical trunk, EDG compartment, enclosed area above the passenger stairs to the Salon Deck, and other equipment installations. Access panels shall be fitted as required to maintain watertight and fire boundary integrity.

Clear headroom in accommodations, working, navigation spaces, passageways, ladders, and toilet spaces shall be as high as practical but shall not be less than 80". Clear headroom under local points shall not be less than 75". Local points include ducts, piping, lights, and girders where alternate arrangements are not feasible.

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

- a) Arrangement of passenger spaces, disabled washroom, and other accessible areas.
- b) Location of internal and external rails, door handles, etc.
- c) Designation of parking positions on the vehicle deck for vehicles with disabled occupants.
- d) Signs and markings in passenger areas.

## 073 VIBRATION AND NOISE

The Contractor shall hire a noise and vibration consultant to perform predictions using a detailed analysis approach in order to meet the vessel's noise and vibration limits. A noise and vibration evaluation report shall be delivered prior to construction identifying acoustic sources, treatments selected, and the resultant predicted noise levels along with vibration sources, treatments, and resultant predicted vibration levels. The Contractor shall make every effort to locate and correct unsatisfactory noise and vibration conditions arising during tests and trials, or subsequently during the guarantee period. Any excessive noise and vibration levels measured during trials shall be corrected by the Contractor prior to acceptance.

### 073.1 VIBRATION

Special attention shall be given to the design and construction of the vessel to minimize vibration. Gensets, air compressors, chillers, accommodation HVAC fans, ventilation fans, and HPUs shall be resiliently mounted. For resiliently mounted equipment, the design of the isolation system shall be such

that all mounting (rigid body) natural frequencies are equal to or less than 0.85 times the lowest exciting frequency of the machine or equipment unless explicitly approved by TxDOT. Foundations for all machinery shall be designed to be dynamically stiff to reduce the transfer of vibration to the ship; local resonances at foundations must not coincide with primary forcing frequencies of the mounted machinery and shall not be less than 30 Hz unless otherwise approved by TxDOT. Dynamically stiff for resiliently mounted equipment is defined as approximately a ten times stiffness ratio of the foundation structure to the resilient mount.

Diesel engine mufflers and exhaust piping shall not be connected directly to any bulkheads, shall be supported by resilient hangers, and include flexible sections. The exhaust piping shall be connected to the diesel engine by a flexible bellows. The exhaust system shall be designed to avoid any resonance coincidence with diesel engine forcing frequencies.

Deck vibration levels shall be in accordance with the limits shown in the table below. These limits apply to all normal transit conditions on the deck in locations where crew and passengers will be located. A complete vibration survey of the vessel shall be performed during builders’ trials. Vibration levels shall be measured in accordance with ISO 6954:2000, reported as weighted overall rms vibration levels applied to the frequency range of 1-80 Hz.

Table 4: Vibration Limits

COMPARTMENT	ISO 6954:2000 LIMIT, MM/S
Pilothouse	8
Crew Compartment	8
Salon (Passenger areas)	4
Observation Deck (Passenger Areas)	4
Engineering Control Room	8
Car Deck	10

In addition, all vessel structures shall be free from excessive vibration that may cause fatigue cracking or otherwise impair the normal operation of the vessel. Guidance on identifying potentially damaging vibration is provided in American Bureau of Shipping, “Guidance Notes on Ship Vibration”. Requests for additional vibration measurements during the vibration survey may be made by TxDOT in areas with subjectively high vibration.

It will be important to avoid coincidences between Voith propulsion blade rate forces and whole-body modes of the vessel. The operational rotation speed of the Voith propulsion units may be modified with Voith's guidance and approval to avoid excessive vibration from any such coincidence, provided other performance aspects of the vessel design (such as design speed and power consumption) are achieved.

The Contractor shall make every effort to locate and correct unacceptable vibration conditions arising during tests and trials, or subsequently during the guarantee period. Any excessive vibration shall be corrected by the Contractor prior to acceptance.

### 073.1 NOISE

Special attention shall be given to the design and construction of the vessel to minimize noise. Airborne noise throughout the vessel shall be in accordance with the limits given in the table below. These limits shall be met during all normal transit conditions with all doors closed.

COMPARTMENT	NOISE GOAL, DB(A) RE 20 MPA
Pilothouse	65
Crew Compartment	70
Salon (Passenger areas)	70
Engineering Control Room	75
Topside (Passenger areas)	75

Noise controls shall be provided as necessary to keep noise levels within these limits. Many noise control features are built into the Contract design; the final selection and proper implementation of noise control features required to meet these noise limits is the responsibility of the Contractor. Any excessive noise levels measured during trials shall be corrected by the Contractor prior to acceptance.

Every effort shall be made to eliminate rattles detected in accommodation spaces emanating from doors, joiner panels, furniture, handrails, and other sources. Guidance on the performance of sound surveys is given in ISO 2923, "Acoustics - Measurement of Noise on Board Ships".

If noise levels exceed 85 dB(A) anywhere in a machinery space, signs shall be posted reading, "DANGER - HIGH NOISE LEVEL - HEARING PROTECTION MUST BE WORN" at each entrance. Sufficient approved protective hearing devices shall be provided for all crew members in this area.

### 074 WELDING

The vessel has been designed for all welded construction. Intermittent welding will only be allowed in air-conditioned areas. Welding shall be executed in accordance with the ABS Reviewed Drawings and the applicable requirements of the Regulatory Bodies.

The Contractor shall submit welding procedures and a welding sequence to the TxDOT Representative and Regulatory Bodies for approval prior to the start of construction.

Welding procedures, and details of welding shall be in accordance with the American Welding Society Structural Welding Code- Steel (D1.1), American Welding Society Structural Welding Code- Aluminum (D1.2), and ABS Rules for Materials and Welding, except where such requirements are exceeded by these Technical Specifications or ABS Reviewed Drawings. No deviation in the approved weld joint design or procedure will be permitted without the concurrence of the TxDOT Representative and the Regulatory Bodies prior to fabrication. All welding shall be performed by welders holding current ABS certification. Certificates shall be maintained during the Contract performance period.

The Contractor shall employ a welding sequence schedule to ensure that all surfaces are fair, free of buckles, bulges, and other surface irregularities, to the satisfaction of TxDOT and per the tolerance limits in IACS No. 47 Shipbuilding and Repair Quality Standard. The welding sequence shall be carried out in such a manner as to compensate for creeping and shrinkage as the work progresses, holding distortion

to a minimum. Locked-in stresses shall be avoided or relieved as much as possible. Welding of structure to decks is to be carefully considered and sequenced to avoid plate buckling or permanent stiffener deflection that may cause the puddling of water and an uneven walking surface for passengers and crew.

All structure in non-potable water and oily water tanks shall be seal welded throughout. The welding of all beams, brackets, stiffeners, etc., exposed to the weather, including exterior structure below the Salon Deck, shall be seal welded to prevent corrosion at the faying surface of the joint. All watertight and oiltight bulkhead and deck perimeters shall be continuously welded both sides. Welding of all brackets, stanchions, diagonals, etc., shall be continuous all-around edges. Welding within the vessel bilges (below the deck plate level) shall be double continuous and seal welded all-around.

Weld sizing and requirements shall be per the ABS Reviewed Drawings and ABS requirements. Where the ABS Reviewed Drawings exceed the ABS requirements, the ABS Reviewed Drawings and this Specification take precedent.

Weld acceptance criteria shall be per the American Welding Society Structural Welding Code- Steel (D1.1) as applied to cyclically loaded structures, and ABS requirements. Welds containing unacceptable defects shall be repaired and reexamined per the weld acceptance criteria and satisfaction of the Regulatory Bodies and TxDOT Representative.

Nondestructive testing shall be performed on the vessel per the ABS Guide for Nondestructive Inspection, and to the satisfaction of the Regulatory Bodies and TxDOT Representative. The extent, location, methodology, and acceptance criteria of the nondestructive testing check points shall be per the ABS Guide for Nondestructive Inspection.

If unacceptable work is found during nondestructive testing, an additional check point shall be made on either side of the segment containing the defect to determine the extent of the defect. Welds requiring repairs shall be re-tested after repairs are made. Necessary repairs shall be made prior to any further work being done. All additional nondestructive testing and repair work required due to unacceptable welding shall be performed at the expense of the Contractor.

The striking of an arc on any principal hull plate surface is prohibited unless the area on which the arc is struck is to be incorporated in a welded joint. Marks left by an accidental striking of an arc shall be ground out to a smooth contour, taking care that the plate thickness is reduced as little as possible. Before welding over previously deposited metal, all slag shall be removed, and the weld and the base metal shall be cleaned.

Where temporary welds or attachments are made for purposes of erection and assembly, after it has served its purpose, the attachment shall be removed, and the weld shall be ground smooth and flush with the adjacent surfaces. Defects appearing at any stage of construction up to the delivery of the vessel shall be cause of or rejection of the item or work in question even though the item or work had been previously approved as satisfactory.

## 078 MATERIALS AND WORKMANSHIP

All workmanship shall be per the criteria invoked in this Specification and to the satisfaction of the Regulatory Bodies and TxDOT Representative. All material, machinery, equipment, piece and/or part

specified herein and installed in the completed vessel shall be new, of recent manufacture, suitable for operation in a salt air and brackish water environment and unused except for the usual acceptance test required. As a condition to TxDOT's approval, the Contractor shall demonstrate, when requested, that such items are suitable for the marine service intended and that the spare parts and service can be obtained with a reasonable degree of readiness in the Houston-Galveston area.

Methods and workmanship within the purview of the US Coast Guard and/or any other regulatory agency herein named, shall be equal to, or at Contractor's option exceed, the agency's requirements or its accepted standards. All other methods and workmanship shall be in accordance with standard marine practice.

The Contractor shall comply with the manufacturer's guidelines for the installation of all equipment on the vessel. If the services of a manufacturer's technical representative are required, such services shall be provided at the Contractor's expense.

All material, unless otherwise specified herein, shall comply with all applicable requirements of the Classification Societies, and shall be so designated in the bill of material on the drawings.

The overweight tolerance of steel members shall be within limits defined by ASTM A6/A6M - 93b, "Standard Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use".

Mill test reports and certifications shall be presented to TxDOT once acquired and shall meet all quality assurances set forth herein. All material is subject to TxDOT material testing and must meet their satisfaction. All material shall meet Buy America Requirements.

All materials shall be free from imperfections of manufacture and from defects which adversely affect appearance or serviceability. All sharp edges or projections which constitute a personnel hazard shall be removed. Hazardous onboard operating conditions shall be prevented by the safe arrangement of machinery and equipment. Protection of personnel against electrical and mechanical operating hazards shall be provided. Shafting, couplings, gears, and similar rotating or moving parts shall have protective guards installed for the protection of personnel. Such protective guards shall be removable without dismantling the surrounding machinery. The crew shall be protected from contact with surfaces 125 deg F or hotter by means of insulation, standoff guards, or handrails. All equipment, machinery and its installation shall comply with OSHA requirements as much as possible.

All pressure grease fittings shall be of stainless steel.

All galvanizing shall be done by the hot dip process, and the zinc shall not be less than 98% pure. In instances where materials cannot be hot dip galvanized without destroying or rendering useless other necessary material requirements, zinc silicate coating may then be substituted.

All bolt heads and nuts shall be of hexagonal standard type. Where required by the Regulatory Bodies or safety codes they shall be of the heavy series. Cap bolts shall not be used unless specifically approved.

Except as otherwise specified, stainless steel called for herein shall be AISI 304 or 316, Finish No. 4 for interior applications. Weather applications shall be AISI 316.

Exterior hull anodes shall be aluminum conforming to MIL-DTL-24779. Zinc anodes shall only be used in closed loop piping systems and shall conform to Specification MIL-A-18001.

There shall be no asbestos in any form installed on the vessel including gasket and packing materials.

The Contractor shall provide all machinery and accessories for this vessel unless otherwise specified.

All machinery, equipment, fittings, etc., shall be new and unused, made by recognized manufacturers having facilities to supply service and parts to Galveston, TX. It is desired that a single source vendor be used as much as possible. Machinery and equipment accessory locations and mounting details shall be submitted to TxDOT for approval.

### 083 SPARE PARTS

An allowance of \$500,000 shall be made in the Contract price for the cost of spare parts for one year's operation of the vessel. The Contractor shall supply TxDOT with a list of spares recommended by the manufacturers for one year's operation of all major items of machinery and equipment. TxDOT shall select the spares to be provided from the list and indicate for each selection whether the item is to be shore-based or shipboard. The Contractor shall deduct the cost of the selected spares and a reasonable handling charge, adjusted for shore or ship location, from the allowance. The credit or debit at the end of the process shall be handled in accordance with the provisions of the Contract.

### 086 INSTRUCTION BOOKS AND AS-BUILT PLANS

On completion of the vessel, the Contractor shall supply TxDOT with six copies of all plans and documents required for the construction of the vessel [three (3) copies 11x17 and three (3) copies 22x34]. The plans shall be updated by the Contractor to show the as-built condition of the vessel. An electronic copy of all Contractor developed plans in AutoCAD and PDF format shall also be provided to TxDOT.

The Contractor shall frame and mount onboard the vessel such plans as required by the regulatory bodies and/or as directed by TxDOT. These plans shall show the "as-built" condition of the vessel.

The Contractor shall prepare a technical manual with Table of Contents consisting of all purchase orders, invoices, original manufacturer's operating and service manuals, preventive and corrective maintenance manuals and parts lists/sources for all of the vessel's mechanical, electrical components and equipment. Steel mill certificates shall be provided, attesting to the fact that the steel was manufactured in the United States. During the construction process, all purchase orders and invoices shall be made available to TxDOT for inspection. The technical manual shall be provided in paper format in binders and in electronic format.

The Contractor shall supply a bound copy and electronic version of all Regulatory Body correspondence and certificates.

The Contractor shall prepare and furnish sounding tables for all tanks in the vessel. The tables shall show actual volume in gallons in each tank, for each inch of depth as measured in the sounding tube or sight gage for that tank.

## 088 CARE OF VESSEL DURING CONSTRUCTION

Rigid control of welding and electrical grounding shall be maintained for the protection of the hull, eVSP units, hull appendages, machinery, and vessel control systems. Care shall be taken during all stages of construction to ensure that welding polarity and ground connections do not damage any parts of the vessel. The Contractor shall ensure that all vessel control systems and sensitive electronics have been electrically isolated per the manufacturer's requirements prior to welding taking place in their vicinity. Care shall be taken to ensure that electrical damage and corrosion caused by surrounding vessels or the dock when the vessel is moored is prevented. The Contractor shall adequately protect the underwater part of the hull prior to vessel delivery.

An approved impressed current cathodic protection system shall be provided for the hull immediately after launching and until delivery of the vessel. The system shall be proposed to TxDOT for approval through the submittal process. The potential of the hull shall be held in the range of -750 to -850 mV (silver-silver chloride cell) to provide protection against corrosion of the hull. The Contractor shall log the hull potentials daily for the first 3 weeks after the vessel has been launched and weekly thereafter. The Contractor shall verify that the cathodic protection used is compatible with the underwater paint system applied. The impressed current cathodic protection system is to be completely removed before delivery.

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

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

Equipment, prefabricated parts, furniture, and materials which are stored in warehouses or elsewhere during the construction period of the ferry shall be thoroughly examined for damage and shall be free of debris, insects, and rodents before being placed onboard. All materials, equipment, machinery, and other items, whether ordered by the Contractor or furnished by TxDOT shall, when received by the Contractor, be marked by the Contractor for use only for this Contract and installed or stowed as appropriate. Stowage shall be segregated from materials for other shipyard activities. Stowage for equipment shall be covered, with temperature and humidity control to prevent deterioration, as required, and shall be patrolled or otherwise protected against fire, theft, vandalism, and the introduction of foreign substances. TxDOT's Representative shall be provided with access to stored equipment at any time upon his/her request.

The Contractor shall provide and maintain an adequate watch for the ferry until delivery to protect the ferry from damage, fire, and pilferage. All damage and all items pilfered shall be repaired or replaced by

the Contractor without cost to TxDOT. Flammable materials shall not be stored onboard the ferry in such a manner that a serious fire hazard is created, and special care shall be given to prevent the possible outbreak of fire. Where torch cutting or welding is being carried out in the vicinity of combustible materials, a fire watch, whose sole duty shall be to watch out for fires and keep firefighting equipment on hand, shall be constantly on duty.

The Contractor shall adequately protect all equipment from overspray of solvents, paints, impact damage, and weld or cutting materials contact while in storage and onboard. Temporary fire-resistant covers or enclosures shall be placed over all equipment where overhead or adjacent hot work is being performed. Scaffolding or work platforms shall be placed over equipment where overhead work is being performed. In no case shall the Contractor use the installed equipment to stand on or walk across for access overhead or beyond. The Contractor shall immediately comply with all directives as may be provided from TxDOT's Representative to protect or improve the protection of installed equipment and components from physical damage.

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

Humidity levels and HVAC shall be maintained as required per the design specifications for all equipment requiring HVAC prior to delivery to TxDOT. Humidity levels and HVAC shall be established prior to installation of equipment requiring HVAC.

The contractor is responsible for all aspects of the vessel until approved delivery to TxDOT is completed.

## 091 INSPECTIONS

All material and workmanship shall be subject to inspection by TxDOT, the American Bureau of Shipping, the U.S. Coast Guard, and other agencies having jurisdiction in the premises, as specified in the Contract. All inspections and tests by TxDOT will be performed in such a manner as to not unnecessarily delay the Contract work.

The Contractor is responsible for properly presenting all completed work for acceptance inspection and for giving adequate notice to the inspection staffs that the work in question is complete and having been pre-tested is ready for inspection. TxDOT's Representative shall promptly either approve all work and material conforming to the requirements of this Contract or will promptly reject all work and material not conforming to the requirements of this Contract. Such rejected workmanship and material shall be satisfactorily corrected, by the Contractor, as specified in the Contract.

TxDOT shall review, inspect, and monitor the performance of the work, to ensure that the work is being carried out in accordance with the Specification, the regulatory bodies, the requirements of TxDOT and in accordance with the approved construction schedule. Unless specifically designated in writing by TxDOT, TxDOT's Representatives shall not have the power to issue an extra work or change order.

The Contractor shall submit a set of digital format (JPEG) progress photographs every two weeks during the construction period illustrating the progress of the work. With the submittal provide a digital photo file index describing the date, subject, and location corresponding to each file name. Provide the file index and digital photo files on a USB drive and delivered via email as attachments to TxDOT's

Representative. Clearly label the USB drive with the date of submittal. Pictures are required regardless of TxDOT or consultant attendance.

The Contractor shall provide suitable air-conditioned office space, complete with furniture, file cabinets, cleaning service, high speed WI-FI and a telephone line with enough space for a minimum of four (4) people. TxDOT's Representative shall always have free access during normal business hours for the purpose of supervising work, inspecting materials, and inspecting workmanship. TxDOT's Representative shall have the authority to reject any material or workmanship, that in their opinion, is defective, unsuitable, or that does not conform to the requirements of these Specifications.

## 099 WARRANTY

The Contractor shall guarantee the hull, outfit, and machinery, including work of his/her subcontractors, against defects resulting from faulty material or poor workmanship that may become apparent within twelve (12) months from the date of substantial completion. The Contractor shall correct such defects at no cost to TxDOT in accordance with the terms of the Contract.

All components shall be warranted by their manufacturers for no less than one (1) year. The warranty period will start upon substantial completion.

Substantial completion and vessel acceptance are based on the issuance of local Texas City OCMI issued COI, and completion of all outstanding comments from USCG and ABS.

All guarantee work shall be done in Texas as close as possible to the vessel's Galveston facilities and operations.

## GROUP 100 – HULL STRUCTURE

### 100 HULL STRUCTURES GENERAL

The Contract plans show an all-welded construction of the vessel on a transverse system of framing using materials in accordance with ABS requirements. The ABS Reviewed Drawings have been developed to comply with the rules and meet the approval of ABS. The development of structural details by the Contractor shall be such as to maintain the same standard of strength, continuity, and alignment throughout the vessel.

Welding shall be carried out in accordance with Section 074 of this specification. Intermittent welding will only be allowed in air-conditioned areas.

All openings in the shell, main deck, deckhouses, and structural bulkheads shall be well-rounded with minimum radii in accordance with ABS requirements. Under no circumstances shall square-cornered cuts be made in the ship's structure.

Decks, bulkheads, and shell shall have surfaces fair with buckles, kinks, or other surface irregularities in accordance with IACS No. 47 – Shipbuilding and Repair Quality Standard. Any plating or materials with pitting will be rejected by TxDOT; even if the defect is within ABS & USCG limits.

Where holes are cut in strength members for routing of pipes, wiring, vent trunks, etc., suitable compensation shall be fitted to maintain strength. No cuts shall be allowed in the flanges of structural members without compensation for strength and approved by TxDOT.

Adequate drain holes and air courses shall be provided in the structure to ensure the free movement of liquid to suction or drains, or of air to vents. This includes the provision of drain holes or scallops in all longitudinal and transverse frames in the hull to allow free draining and avoid pocketing of water or fluids away from the lowest point in the bilge.

All structural steel materials, including forgings and castings, shall be in accordance with the ABS Reviewed Drawings and ABS requirements. Materials shall be new and shall have material identification clearly marked thereon, for the purpose of material tracking and confirmation. Mill test certificates shall be supplied to TxDOT. Any substitutions required by the Contractor for reasons of availability must be approved by TxDOT.

Structural removal paths as shown on the ABS Reviewed Drawings for equipment such as the Voith units and battery racks shall be maintained free of electrical and piping installation interferences.

### 110 HULL STRUCTURE

The hull lines shall be carefully lofted and faired by the Contractor. The Contractor shall furnish printed and electronic-format copies of the final lines plan and mold loft offsets to TxDOT for approval, prior to lofting the parts.

### 110.1 SHELL PLATING

The thickness of plating shall be as shown on the ABS Reviewed Drawings. The boundaries of differing plate thickness shall be maintained as shown. Seams and butts shall be located to suit the Contractor's standard practice, subject to approval of TxDOT's Representative. Four-way joint intersections shall be avoided. Shell openings shall be compensated for with insert plates with radiused corners. Insert plates with greater than 1/8-inch thickness difference to the surrounding plate shall have the thickness reduced at their perimeter at a 3:1 bevel.

### 110.2 BOTTOM STRUCTURE

The vessel shall be of single-bottom construction. The bottom structure shall consist of a center vertical keel skeg and side keelsons fabricated from plate. A flanged plate floor shall be fitted at every frame, intercostal between the keel and keelsons. Floors and side frames shall be efficiently connected by brackets as indicated in the ABS Reviewed Drawings.

Continuous welding of the hull structure shall be ensured by means of scallops in web frames, floors, etc.

### 110.3 SHELL APPENDAGES

Two centerline peak skegs shall be laid out and constructed as indicated in the ABS Reviewed Drawings. The skegs shall be independent of the hull structure as indicated in the ABS Reviewed Drawings.

The peak skegs, rub rail, inaccessible ends of the main centerline skeg, and anchor guide voids shall be fitted with bronze fill and drain plugs set within 316 stainless steel welded couplings. These inaccessible volumes shall be treated with an environmentally benign rust preventative, Esgard Bio-Float or similar, in accordance with the manufacturer's instructions.

Two assemblies of 304 stainless pipe shall be fabricated and fitted to the hull below the deck edge in way of the rescue boat davit lift position. The structures shall extend to within nine inches of the design waterline. The configuration and arrangement shall prevent the rescue boat from drifting under the deck edge when floating alongside the vessel.

### 110.4 LONGITUDINAL FRAMING

Longitudinal girders shall be installed as shown on the ABS Reviewed Drawings. Girders shall be bracketed on both sides of oil tight and watertight bulkheads or slotted through watertight bulkheads and collared. Special attention shall be paid to the alignment of girders under the eVSPs.

### 110.5 TRANSVERSE FRAMING

The Contractor shall detail, layout, and construct frames as shown in the ABS Reviewed Drawings. Frames shall be effectively bracketed to deck beams, girders, and floors where required.

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

## 110.6 MAIN TRANSVERSE BULKHEADS

The hull shall be divided by transverse watertight bulkheads as shown in the ABS Reviewed Drawings. The bulkhead at Frame 64, on both ends, shall be considered the collision bulkheads for regulatory purposes. These collision bulkheads shall have suitable scantlings and shall have no penetrations except as permitted by the regulatory bodies. All other bulkhead penetrations shall be as high and close to centerline as practical. Special treatment must be given to bulkheads in way of loads imposed by girders.

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

## 110.7 MAIN DECK

The outline and extents of the Main Deck (vehicle deck) shall be as defined by the final Lines Plan developed by the Contractor.

The main deck shall be framed longitudinally. Scantlings shall be in accordance with Reference (F). In way of deck machinery and mooring fittings, the main deck shall be suitably reinforced.

Pipe curbs shall be provided on the vehicle deck as shown on the ABS Reviewed Drawings. The curbs shall be fabricated from 3-inch Schedule 80 pipe.

## 110.8 STANCHIONS

Stanchions shall be provided as shown in the ABS Reviewed Drawings and constructed of steel pipe. Hull stanchions shall be fitted at both the top and bottom with sole plates, and the associated girders or plating to which they are attached shall be reinforced with sufficient bracketing top and bottom to provide an effective moment connection in two axes per ABS requirements. See References (G) and (H).

No diagonal truss structure will be accepted by the Owner as a means of meeting ABS requirements. Any additional brackets required by the ABS surveyor shall be provided.

## 110.9 EMERGENCY CABLE TRUNK

A structural trunk shall be provided between the bulkhead at the "A End" of the EOS and the bulkhead at the Engine Room/#4 Comp boundary; frames 14 to 19 on the "A End". The trunk shall permit the installation of emergency power distribution, signal, and control cables between the EOS and #4 Comp without exposure to the Engine Room. The trunk shall be sized to accommodate up to forty (40) cables of 1/2 inch diameter, single banked and secured to cable trays. The trunk shall include bolted access hatches sufficient to allow inspection, painting, and cable securing at required intervals. The trunk shall be insulated to provide an A-60 boundary from the Engine Room in accordance with Section 635.

## 111 BULWARKS

### 111.1 GENERAL

Bulwarks shall be 3 foot 6 inches high and extend to the ends of the Main Deck and around the Salon Deck as shown on the ABS Reviewed Drawings and Reference (L). The bulwark plating shall be capped with an angle, heel up as shown in Reference (L).

The bulwarks shall be supported by brackets installed on alternate frames. Local stiffening doublers and insert plates shall be provided in way of fittings and closed chocks installed in bulwarks. Freeing ports shall be cut in bulwarks as shown on the ABS Reviewed Drawings. The Contractor shall ensure the freeing port area meets the requirements of the regulatory bodies.

### 111.2 EMERGENCY LADDER DECK SOCKETS

Install emergency ladder sockets integrated with the IBA saddles welded to the bulwarks as shown in Reference (XX). These sockets shall be sized to the emergency evacuation ladders located in the evacuation zone at each end of the vessel.

## 125 TANKS

Tanks shall be constructed as indicated in the ABS Reviewed Drawings. All welds in tank structure shall be double continuous throughout.

Limber and vent holes shall be 1-1/2 inch minimum or as shown otherwise on the ABS Reviewed Drawings. Additional limber and vent holes shall be cut as necessary to ensure proper venting and draining of the tanks.

As shown in Reference (N), hatches shall be installed on each tank. Tank suction and sumps shall be arranged as shown in Reference (JJ) to provide near complete emptying. Contractor shall install 1-inch diameter round bar grab holds and rungs to provide access to the tanks.

The nominal fuel tank capacity listed on the Plans represents the 100% capacity of the tank, operational capacities will vary. The Contractor shall ensure that the maximum hydrocarbon carrying capacity of the vessel cannot exceed 10,500 gallons at any time.

During trials and system calibration the tank gauging systems, both digital and visual, shall be calibrated to read FULL at 80% capacity.

## 151 DECKHOUSE STRUCTURES

The deckhouse structure shall be arranged as shown in the ABS Reviewed Drawings. All scantlings and dimensions shall be as shown in Reference (M).

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

Where interior bulkheads are required to be of steel, they shall be utilized as deck supports in lieu of pillars and girders. Care shall be taken to ensure that bulkheads used in lieu of pillars and girders are well supported from below and that the resulting reactions are properly carried down and distributed into the main hull. Outside corners of interior steel bulkheads in way of living and working spaces which might present a hazard to personnel shall have a radius of not less than 3 inches.

Weather decks and all interior steel decks, coamings, and deck connections of steel bulkheads, in way of toilets, washrooms and other "wet" spaces, shall be proven tight prior to application of any deck or bulkhead covering.

Corners of openings at windows and doors shall be well rounded. Square frame doors are to have "mouse ear" stress relief radii at the corners.

Bolted access panels for access to machinery or void spaces shall be installed on internal bulkheads of the deckhouse with appropriate gaskets, as required.

## 167 HULL AND HOUSE CLOSURES

Access shall be provided to all spaces for proper working purposes, inspections, and maintenance. Closures shall be appropriate to the location, use and watertight integrity of the compartments served, and shall be equivalent in strength to the adjacent structure. Contractor's standards will be considered for approval of doors, access hatches, manholes and scuttles, where applicable. A schedule of same shall be submitted for approval by TxDOT.

All mechanical parts on closures shall be equipped with rugged corrosion resistant bearings and pins and shall be provided with means for proper lubrication.

Weathertight doors and hatches shall be given a hose-test equivalent to that given the adjacent structure and per Regulatory Body requirements.

Doors shall be located as shown in References (O) and (KKK). Watersheds shall be provided over all doors opening to the weather unless other means are provided to prevent water dripping from the top of the doorway. All doors shall be operable from both sides.

All doors, frames, and sill heights shall comply with the regulatory requirements for the type of door and location specified. All exterior doors shall be weather-sealed around the edges.

Refer to Section 624 for non-structural doors.

Bolted watertight and oiltight manholes shall be per ASTM F1142, "Manhole Cover Assembly Bolted, Semi-flush, Oiltight, and Watertight" or ASTM F1143, "Manhole Cover Assembly, Raised, Oiltight, and Watertight".

Hinged watertight and oiltight manhole, shall be per ASTM F1144, "Manhole Cover Assembly, Bolted Hinged, Semi-Flush, Oiltight, and Watertight".

A flush mounted BERP (Bolted Equipment Removal Plate) shall be located on the main deck at centerline and amidships. This BERP is detailed in Reference (N). This removal plate shall be provided with the required bolts, gaskets, etc. to maintain the watertight integrity of the deck.

## 171 MASTS

Fabricated masts for radar and radio antennae, navigation lights, etc., shall be located on each wheelhouse top as shown in Reference (Q). A stern light post shall be fitted as shown in Reference (CC).

The navigation light masts shall be of aluminum construction with steel base. The mast shall be a minimum of 6-inch diameter. The masts shall be fastened to the base with stainless steel bolts, nuts, and washers, or equivalent fasteners that will facilitate removal of the mast as shown in Reference (Q). The design of mast and base shall allow the mast to be hinged. When lowered by the mast winch, shall rest into the mast stand on the bridge detailed in the drawing noted. The masts shall be galvanically isolated from the steel base. The Contractor shall develop mast attachment points to allow lifting and removal of the mast with a crane.

Electrical cables on the masts shall be provided with watertight receptacles at each light fixture, and watertight receptacles at the mast base, to enable removal of the mast assembly.

Other masts and staffs shall be provided to support light fixtures and antennas as required. The arrangement of the fixtures and antenna shall be submitted to TxDOT for approval. Masts and staffs on the Pilot House tops shall be fabricated from steel pipe and braced as necessary to minimize vibration. Any pipe masts are to be sealed with welded end caps to mitigate internal corrosion. Fasteners shall be stainless steel. All light fixture and electrical equipment on pilot house tops shall be provided with watertight plugs and access holes in mounting structure to enable removal and replacement of the equipment.

The house top shall be adequately reinforced to take the imposed loads from the mast and other stanchions, posts, etc. attached to the house top.

The main masts (2 ea.) shall be fitted with a yard arm below the highest mast head light leading to port or starboard. The yard arm shall be of sufficient size and strength to support day shapes, blocks, shackles, cleats, and halyards with USCG approved day shapes provided by the Contractor. This arrangement must match Reference (Q) unless noted by TxDOT or their Representatives.

The yard arms shall be rigged with 5/16 in diameter Dacron halyards with bronze snap hooks at each end. The halyards shall be installed complete with shackles, snap hooks, blocks, and cleats. The block shall be a bronze shell type with self-lubricating sheave. Shackles and cleats shall be stainless steel.

## 180 EQUIPMENT FOUNDATIONS

Foundation design shall provide adequate strength to support and maintain alignment of the mounted equipment in its operational mode, and stiffness to prevent excessive vibration. Major equipment foundations shall be per ABS Reviewed Drawings. The Contractor shall develop equipment foundations and mountings for machinery, electrical components and cabinets, and equipment not otherwise detailed in the ABS Reviewed Drawings.

Loadings to be considered in design of foundations shall include the dry weight of equipment, weight of fluids, dynamic loadings induced by equipment in operation, weights of supported ancillary components and/or systems (e.g., wiring, piping, control equipment, safety shields), and vessel motions.

Foundations shall be adequately supported by and braced to the vessel's structural members so that equipment loadings are properly distributed. Additional structural support members, headers and chocks shall be provided as required. Foundations shall not be attached directly to unsupported plate. Design of foundations shall provide for alignment and such other special criteria, such as vibration limitations, as may be specified by the equipment manufacturer or regulatory bodies. The Contractor shall provide to TxDOT alignment reports for all equipment requiring alignment.

Design of foundations shall permit equipment access as required, and access for maintenance of foundations and adjacent hull structure. Pockets and inaccessible places where corrosion cannot be controlled, or where dirt and debris can accumulate shall be avoided. Foundations shall incorporate suitable supports and brackets to prevent excessive or unusual vibration under the normal range of vessel operating conditions.

For enclosures that are bottom mounted cabinets (Main Switchboard, VFD Sections, etc.), sway bracing shall be provided per manufacturer recommendation.

## 182 PROPULSION PLANT FOUNDATIONS

Substantial foundations shall be provided for the main propulsion eVSP units and ship's generator sets, as shown in Reference (R) and the ABS Reviewed Drawings. Foundations for the propulsion machinery shall be fitted as an integral part of the vessel's primary structure, as shown on the ABS Reviewed Drawings. Abrupt discontinuities shall be avoided by gradual tapers at the extremities of foundation structure. Voith shall review and approve all eVSP foundations for the propulsion plant prior to installation.

## 191 FIXED BALLAST

The Contractor shall conduct a deadweight survey after the vessel launches for the purpose of establishing the as-built weight, longitudinal center of gravity, and transverse center of gravity prior to installing fixed ballast to offset any vessel list and trim. The Contractor shall submit their findings to TxDOT for approval prior to installing fixed ballast.

Prior to installation, the Contractor shall prepare a fixed ballast plan for submittal to TxDOT and the USCG for review and approval. A notional fixed ballast rack structure and location is as shown in Reference (S). The fixed ballast shall be installed prior to the final stability test required by USCG as established by NVIC 5-82 for Fixed Ballast.

The Contractor shall provide up to 40,000 lbs of lead ballast bars, located to minimize list and trim in a loading condition with mid-level major operating tanks and no cargo deadweight. This fixed ballast may be required to be in multiple locations to properly correct trim and list. Tanks shall be approximately loaded as follows:

- 50% to 80% loading for fuel oil tanks, non-potable water.
- Ancillary tanks such as lube oil and hydraulic oil storage may be 80% full.
- Sewage, waste oil, and oily water tanks may have a nominal amount of tankage.

The lead ballast bars shall be vinyl or plastic coated, or the ballast rack structure completely sealed with caulking once the bars are installed and secured.

## GROUP 200 - MAIN PROPULSION

### 200 PROPULSION PLANT GENERAL

The propulsion system is a double-ended design with an electric Voith Schneider cycloidal propeller (eVSP) at each end of the vessel. Each eVSP shall be nominally rated for 1200 kW output to the propeller from the integrated propulsion motor. The eVSPs will be powered by a combination of diesel gensets and/or a lithium ion battery energy storage system. Four (4) 599 kW Tier 3 diesel gensets will provide both propulsive power and ship's hotel loads as specified in Section 233. All diesel engines shall burn No. 2 diesel fuel having a flash point greater than 110°F. See Section 233 for additional propulsion plant details.

TxDOT's approval shall be required in writing for each item of machinery and equipment prior to Contractor purchase. If a piece of equipment is identified specifically by manufacturer and part number within the Specification or Drawings, it shall be considered as being approved for purchase provided the Contractor has verified that part numbers are current with manufacturer numbers. Note that part numbers provided by the Specification and Drawings are not intended to describe every feature required. For example, a pump part number may not describe the requirements of the motor or may not include such required features as mechanical seals.

All machinery, equipment, fittings, and similar items shall be new and unused, made by recognized manufacturers having facilities to supply service and parts in the Galveston area of Texas. Common equipment shall be selected, as far as possible.

A foundation shall be provided for each piece of machinery. Foundations shall be attached to basic structure, which shall be stiffened where necessary to carry both static and dynamic machinery loads. Generally, foundations shall be fabricated from steel plate, welded together, and to the ship's structure.

Each machine and piece of equipment shall be installed, aligned, and fastened within the tolerances prescribed by the manufacturer. Equipment shall be removable without cutting foundations or attachments.

The entire machinery installation shall be free of excessive vibration while operating. Reciprocating machines or other machines that generate objectionable vibration shall be isolated from the hull with vibration damping resilient mounts.

See Group 500 for general piping system requirements applicable to all piping systems on the vessel.

### 201 MACHINERY ARRANGEMENT

Machinery shall be arranged as generally shown on Reference (C) and is intended for manned operation. The Contractor shall continue the development of the arrangement in accordance with ABS Reviewed Drawings to show in detail the actual machinery to be installed. Plans shall be submitted to TxDOT for approval. The final position and orientation of all machinery and equipment shall be approved by a TxDOT Representative during construction.

Machinery shall be installed to allow easy access for maintenance and disassembly. Adequate air space shall be allowed around machinery for cooling and combustion air circulation. The final location of all machinery shall be subject to the approval of TxDOT.

Obstructions or interferences shall be avoided where possible. The Contractor shall pay particular attention to sharp edges, corners, or protruding appendages of equipment or structure where operating personnel are likely to pass or work. Such obstructions, if unavoidable, shall be provided with guards or other means to protect personnel from injury.

To facilitate future machinery removal and re-installation, route all wiring, and piping in the Engine Room overhead clear of the machinery removal hatches and additional "Keep Clear" zones noted in Reference (C). Pad eyes or lifting points shall be installed in the overhead of the machinery space to facilitate future removal of major machinery items and the propulsion Energy Storage System. Pad eyes or lifting points shall additionally be installed in each engine room stairway and stack entry for the removal of the Energy Storage System to the satisfaction of TxDOT. Pad eyes or lifting points are to extend below the structural fire protection to allow use without disruption of the insulation.

Machinery layout shall allow an unobstructed path for removal of major machinery items.

Walkways, with handrails, shall be provided for access and service to all machinery. All handrail openings shall have a chain, made of 316 Stainless Steel, with clips as a safety measure. TxDOT reserves the right to contact and consult with the machinery and equipment manufacturers directly or jointly with the Contractor on this project.

Equipment notation shall be relative to the ends of the vessel's "A End" and "B End". Redundant equipment shall be labeled as such. Where redundant equipment is installed in the same end of the vessel, numerical notation shall be used, i.e. A-1, A-2, etc.

Machinery, equipment, and fittings shall be simple, rugged, and selected for trouble free operation. Each machine and piece of equipment shall be aligned to the tolerances prescribed by the manufacturer.

The Builder shall employ the services of a qualified manufacturer's service engineer as required to supervise and start up major items of machinery.

### 233 PROPULSION INTERNAL COMBUSTION ENGINES

The propulsion internal combustion engines, propulsion control system and associated equipment listed herein shall be furnished and installed by the Contractor. The propulsion system and its controls shall comply with all applicable USCG and ABS class requirements including all regulatory documentation, failure modes analysis, and testing and verification procedures.

Furnish and install four (4) diesel generator sets for vessel propulsion. The diesels shall be fully self-contained, with mechanically driven fuel oil, jacket water and lube oil pumps installed on the engine.

These generators shall provide all electrical power for the propulsion system, energy storage system charging, and for the ship's service electrical system. The generator sets shall meet all applicable regulatory rules and requirements set out in Sections 070 and 200. The generator diesel engines are described in this section; see Section 311 for description of the alternators.

The propulsion alternators shall be shipped to the engine supplier, who is responsible for coupling, aligning, and mounting each engine and propulsion alternator onto a common skid. The skid shall be designed for installation on vibration mounts to the vessel's structural foundations. Vibration mounts shall be TSC T10 or equivalent isolators shall be supplied by Christie and Grey. The engines and generators are to be painted CAT® yellow and the skids are to be painted flat black.

The propulsion generators diesel engines shall be CAT Model C18 SCAC T3 AUX 803 BHP or equal. The engine shall have a prime power rating of 599ekW at an operating speed of 1,800 rpm. The diesel jacket water shall be cooled via channel coolers; aftercooler shall be cooled via keel coolers. The engines shall be provided with all necessary documentation to demonstrate certification to EPA Tier 3 and IMO Marine Commercial Propulsion (E3 Cycle) Emission Standards and certification to EU Stage IIIA and CCNR Stage II (E3 Cycle) Emissions Standards.

The four (4) propulsion generator engines will be configured for compressed air starting with turbine air starting motors and shall be installed with drip /spill pans under each generator set.

Each generator engine shall be furnished with all necessary features, equipment, and accessories, in an ABS approved package, including but not limited to:

*Table 5: Generator Features and Equipment*

QTY	ITEM
1	Front service oil system
1	LO Service Pump, engine-driven
1	Front service fuel system
1	FO Service Pump, engine-driven
1	3-micron duplex FO filter, engine-mounted
1	Oil Cooler
1	Set Regulatory approved flexible cooling water inlet and outlet connections.
1	Spin on water filter
1	JW Centrifugal Pump, engine-driven
1	AC Centrifugal Pump, engine-driven
1	Air Pressure Regulator
1	Air Start Motor Filter
1	Air Start Solenoid Valve
1	Engine Support, Rear
1	Marine Engine Control Panel, with Mounting Bracket
1	Color Marine Display CMD13 Gen 2 Display
1	CMD Wiring Connection Kit
1	Set for Transmission Sensors-ADEM 4
1	Flex Fuel Lines, with spray shielding
2	Pressure Cap & Filler Neck Kit
1	Dry Exhaust Elbow, 203.2mm (8")
1	Flexible Exhaust Fitting, 203.2mm (8")
1	Exhaust Outlet Flange, 203.2mm (8")
1	Air Inlet Adapter
1	Muffler, 10" with weld flanges, bolts, nuts, and gaskets (per Specification)

QTY	ITEM
1	Center sump deep (18 gallon) Oil Pan
1	JW Temperature Control Valve (thermostat and housing)
1	JW Heater
2	Expansion Tanks mounted off skid by shipyard (see SWBS 256 below)
1	Exhaust Manifold, water-cooled
1	Side Outlet, single exhaust connection, standard 6 in flange
1	Water Cooled Turbocharger
1	Intake Air Cleaner
1	Set Tuned Skid Vibration Mounts, Christie Grey type TSC T10
1	Starting Motor Compressed Air
1	Speed Control Governor (speed regulation from no load to rated load, 5
1	Automatic Over-Speed Shutdown
6	Alarm Contacts (open for alarm condition) for the following parameters:
1	Customer Interface Box, CIB, with color digital display
1	Set Lifting Eyes
1	Operation, maintenance, and parts manual
1	Single point lift spreader bar for engine

The Contractor shall provide one (1) complete set of the generator engine manufacturer's recommended spare parts and one (1) set of special engine tools.

Alarm and control functions are to be wired to the separate off-unit mounted customer interface box (NEMA-12 enclosure) with terminal strips. The diesel generator gauge board shall be mounted near the unit it serves, but off the skid.

### 235.1 DIESEL ENGINE CONTROL

Each diesel engine shall be provided with an Engine Control Unit housed in a Customer Interface Box (CIB) provided by the diesel manufacturer and mounted off the engine skid, in a nearby location approved by the TxDOT Representative and allowing for local control of the diesel engine. The CIB (with full color digital display monitor) shall include:

- Full color digital display to monitor:
  - Engine speed
  - Engine run hours
  - Engine load (% of MCR)
  - Water in fuel connection on harness
  - Engine oil pressure
  - Fuel consumption
  - Coolant temperature
  - Low coolant level alarm
  - System DC voltage gauge
  - Stack temperature monitoring
- Engine Control Unit enclosure will house:
  - Engine PLC related wiring (Contractor shall provide correct cable length to engine – cable splices are not acceptable.)

- Two independent power supply circuit breakers
- Terminal strip for ship interface to fire suppression shutdown signal, throttle interface, fused power supply circuit and communications wiring
- Emergency stop button

It shall be possible to start and stop the engine and to control engine speed locally. A Local/Remote Control Switch shall be provided in the CIB to switch the engine from local control to remote control from the Propulsion Switchboard PMS. An Idle/Run switch shall be provided in the CIB to allow the engine to operate offline at a pre-set idle RPM for warm up or maintenance.

## 245 VOITH SCHNEIDER PROPELLERS

The Contractor shall provide and install two (2) electric Voith Schneider Propellers, eVSP 26/126.5 or approved equal. The eVSPs shall be designed, constructed, and certified in accordance with ABS requirements and provided with all required approvals and certificates. Installation shall be in strict accordance with the manufacturer's installation guidelines.

Each propeller shall be provided with all required features and accessories including, but not limited to the following:

- Input power rating 1,580 kW maximum (1,200 kW expected maximum for this vessel)
- Integrated, water cooled, synchronous permanent magnet motor
- 2650mm blade orbit diameter
- 5 drop-forged seawater-resistant steel blades, 1625mm blade length
- Aluminum anti-corrosion anodes, sized for 5 year minimum drydock interval
- Complete lube oil and control oil systems with standalone hydraulic power unit (HPU) including:
  - Two (2) electrically driven, frequency controlled lube oil pump, driven with 480V/3-phase/60Hz TEFC motor
  - Oil cooler for freshwater cooling
  - Duplex lube oil filter
  - Valves, controls, and instruments according to manufacturer standard and regulatory requirements.
- Elevated oil head tank
- Redundant power supply as required by USCG.
- Propulsion Control System as described in Section 252
- Local gauges and thermometers
- Process connections and sensors for monitoring all required parameters, including lube oil pressure, lube oil temperature, control oil pressure, control oil temperature, rotor oil pressure, and rotor rpm.
- Process connections and sensors for alarming all required parameters, including lube oil pressure, lube oil temperatures, lube oil head tank level, lube oil filter differential pressure, control oil pressure, control oil temperature, control oil level, control oil filter differential pressure, rotor oil pressure, input speed sensor, lack of control response.

The contractor is responsible for providing adapters, piping, hoses, cabling, motor starters, lubricating oil, etc. required for installation and commissioning of the eVSPs.

Provide one (1) complete set of special tools per vessel as required for eVSP operation and maintenance. Special tools are any non-commercial tools, repair appliances, test equipment, or specialized adaptors, which do not conform to ANSI or other internationally recognized standards.

Each VSP shall be filled with an environmentally acceptable lubricant (EAL), as defined by the EPA Vessel General Permit, which meets the manufacturer's specifications. All lubricants are subject to manufacturer and Owner's Representative approval.

## 252 MAIN PROPULSION CONTROLS

The vessel shall have an electronic propulsion control system, supplied by Voith and integrated into the overall propulsion system by Siemens. The propulsion control systems shall be installed and adjusted under the supervision of the Voith and Siemens authorized representatives. The system shall interface with the Siemens power management and power distribution system as well as the integrated alarm system to allow vessel propulsion while preventing casualty situations. Propulsion controls shall allow omnidirectional thrust vectoring of each eVSP unit and shall provide status feedback to the operator. The system shall automatically apply ramp rates, RPM, pitch, and power limits, and shall monitor parameters such as temperatures and pressures to prevent hazardous conditions.

Control of each eVSP shall be achieved through combined speed/direction control levers. Each control station shall have two speed/direction levers, one for the "A End" eVSP unit and one for the "B End" eVSP unit. Propulsion system control heads and any associated controls or indication units shall be mounted at both Pilot House consoles and in console of the Engineer's Operating Station (EOS). Each control station shall have controls and indications allowing control transfer between stations, and indicating which station is in control. Indications in the Pilotheuses shall be dimmable.

The EOS control stations shall be considered the "master" control station and shall have a two-position control transfer switch to toggle between "local" and "remote" control. When the switch is turned to "local," control shall be retained at the EOS station. When the switch is set to remote, control may be transferred to one of the two remote Pilothouse stations.

The Voith remote diagnostics switch and key is to be mounted inside the A-end pilothouse starboard console as approved by TxDOT

## 256 COOLING WATER SYSTEMS

Freshwater cooling circuits shall be provided in accordance with Reference (T) and as described herein. The cooling water systems shall provide adequate cooling to the main propulsion generators and eVSPs, transferring heat to ambient seawater.

Where cooling piping penetrates the hull, SCH 80 piping shall be used between the grid or channel cooler and the cooler isolation valve. A positive shutoff or USCG Category A isolation valve shall be installed close to the hull penetration. The valves shall be easily accessible for operation and maintenance.

Flanged flexible connections shall be provided at all connections to equipment except as otherwise noted.

All cooling circuits shall be flushed of all foreign matter prior to being placed in service. Flushing reports shall be provided to TxDOT.

### 256.1 PROPULSION GENERATOR ENGINE COOLING

Each generator engines shall each have two cooling water circuits: jacket water and aftercooler as shown in Reference (T). Water is circulated by engine-driven coolant pumps provided with the engine. Connections to the engines shall be in accordance with the manufacturer's requirements and shall utilize flexible hoses.

Jacket water circuits shall utilize fabricated channel coolers with cooling water circulated through a steel channel extrusion welded longitudinally to the hull rejecting heat to surrounding seawater. Channels shall be arranged along the length of the hull, generally as shown on Reference (T). Fairing plates shall be welded to the hull at fore & aft facing ends to protect the channel coolers from underwater debris. The interior surface of each channel cooler and the interfacing region of the hull shall be blasted near white prior to welding to remove paint and contamination. Immediately prior to being placed in service, the channel coolers shall be pickled to remove residual oils and oxidation, flushed, and filled with corrosion inhibited coolant.

Generator aftercooler circuits shall utilize Fernstrum copper-nickel manufactured grid coolers. Each generator aftercooler circuit shall be fitted with two grid coolers, each capable of providing the full cooling requirement of the engine. The grid coolers shall be piped in parallel, and flow balanced so flow is evenly divided between coolers when isolation valves are open.

Engine cooling water shall be treated in accordance with the engine manufacturer's written instructions, including the addition of the approved cooling system corrosion inhibitor. Alternatively, the Contractor shall provide pre-mixed engine coolant as recommended by the engine manufacturer. The Contractor shall provide one additional 30-gallon drum of pre-mixed engine coolant, and a corrosion inhibitor test kit to the vessel prior to delivery.

### 256.2 EVSP COOLING

Two freshwater cooling circuits shall be provided for the eVSPs and eVSP HPUs as shown on Reference (T), one for each end of the vessel. Each cooling circuit shall feed one VSP its HPU. Coolant shall be circulated by an electrically driven centrifugal pump through Fernstrum copper-nickel manufactured grid coolers to provide cooling for the equipment.

Each VSP cooling circuit shall be fitted with two grid coolers, each capable of providing the full cooling requirement of the engine. The grid coolers shall be piped in parallel, and flow balanced so flow is evenly divided between coolers when isolation valves are open.

Connections at the VSP and HPU shall utilize flexible connections with sufficient flexibility to account for equipment movement.

VSP cooling water shall be treated with corrosion inhibited deionized water, Pencool or TxDOT approved equal.

### 256.3 GRID COOLER INSTALLATION

All grid coolers shall be installed in recessed hull pockets and covered by robust steel guards to protect them from floating debris as shown on Reference (T) and the structural plans.

Grid coolers shall be electrically isolated from the hull with non-conducting gaskets, washers, and bolt isolation kits. After installation and prior to filling with coolant, each grid cooler shall be tested for galvanic isolation prior to launch. Each cooler shall be resistance tested, the measurements recorded and verified by the Owner's Representative prior to the vessel's entry into the water.

Each keel cooler guard shall be fitted with four (4) 24 lb aluminum anodes. The bolt-on anodes for each cooler shall be electrically isolated from the guard and hull with insulation washers and sleeves. Each isolated anode shall be electrically bonded to the keel cooler with an insulated grounding strap connected between the isolated anode and the anode post on the keel cooler. Care shall be taken to assure that the grounding strap only provides electrical continuity between the isolated anode and the keel cooler, and the grounding strap cannot come into contact with the keel cooler guard or hull. The keel cooler anodes shall be installed under the guidance of a TxDOT Representative

### 256.4 EXPANSION TANKS

The Contractor shall design, fabricate, and install expansion tanks for each cooling circuit, sized as indicated on the reference drawing and in accordance with manufacturer's requirements. Mount expansion tanks so the bottom of the tank is located well above all vent locations on the cooling circuit it serves at any normal vessel trim.

Each engine expansion tank shall be fitted with an engine manufacturer provided pressure cap with stainless steel tube vent line leading to approximately three inches above the floorplate level.

Each eVSP expansion tank shall be fitted with a vent gooseneck.

All expansion tanks shall be fitted with a sight glass, low level alarm switch, drain line, and filling connection from the non-potable water system. The expansion tanks shall be fitted with vent lines connected to the high points of their respective systems to allow the venting of trapped gases.

The preferred locations of the expansion tanks are as shown in Reference (T), and shall be subject to approval by the Owner's Representative.

## 259 EXHAUST SYSTEM

All diesel engines shall exhaust through a separate pipe and silencer as shown in Reference (U). The propulsion generator diesel engine silencers and tail pipes shall be grouped within the engine room uptake and lead up individually to the weather. Piping materials shall be as specified on Reference (U). Note that type 316 piping for exhaust tailpieces could be long lead items due to Buy America requirements, Contractor to plan accordingly.

The Contractor shall verify, by calculation prior to installation and subsequently during trials, that engine backpressure does not exceed the manufacturer's requirements.

A hospital grade spark arresting silencer, Maxim MSA44 or equal, shall be installed in each propulsion generator exhaust system. The emergency generator exhaust shall be fitted with a Maxim MSA22 or equal spark arresting silencer.

Flexible connections shall be provided in each engine exhaust near the engine exhaust outlet and elsewhere as indicated on Reference (U) to allow for vibration and thermal deflection. The flexible connections shall be multi-ply convoluted type 321 stainless steel bellows, with fine pattern convolutions, flow liners, and flanged ends. Flow direction shall be permanently marked on the exterior. One flanged end of each flexible connection shall be a "Van Stone" type. Additional flexible connections shall be installed as needed to provide for thermal movement.

See Sections 503 and 505 for general piping requirements. Exhaust piping, silencer, and expansion joints shall be insulated and lagged, see Section 508.

Mountings and supports for exhaust piping and silencers shall be Christie & Grey or equivalent. Supports shall be provided for each exhaust pipe and silencer with provision for thermal movement without straining the piping, machinery, or ship structure. Heat stops shall be fitted at the hangers and foundations to insulate the piping and silencers from the structure. Where hanger brackets are welded to exhaust piping, reinforcing pads or bands shall be used to prevent hard spots.

Each exhaust pipe shall be fitted with thermocouple/thermowell assemblies for interface with the vessel's engine room alarm system. The thermocouples shall be installed at a location near the turbocharger outlet(s).

A 1 1/2-inch drain line fitted with a gate valve shall be installed at the bottom end of each main engine and generator exhaust pipe vertical run.

Each generator diesel exhaust pipe shall penetrate the stack above the Stack Top through a collar with a nominal diameter 2 in greater than the tail pipe. Four flat stock guides equally spaced around each pipe shall be provided to center the tail pipe in the collar. A rain hood of 3/16 in stainless steel plate shall be provided over each collar with the hood continuously welded to the tail pipe at a height of 2 in above the collar. The outer diameter of the rain hood shall be approximately 2 in greater than the diameter of the collar. The rain hood, centering clips, and tailpipes shall be 316 stainless steel.

## 261 FUEL OIL SYSTEM

The fuel oil systems shall consist of service and transfer piping for the diesel engines arranged as shown in Reference (V).

Drip pans with drain valves shall be provided to collect normal oil leakage under pumps, filters, and other similar equipment subject to leakage or regular maintenance. See Section 500.5 for details.

### 261.1 FUEL SERVICE SYSTEM

The main generator diesel engines shall take fuel oil from a 645-gallon day tank which in turn draws from a 6,300-gallon fuel oil tank located in the No. 6 compartment, "B End". The EDG shall take and return fuel from a local 90-gallon fuel tank on the Salon deck within the emergency generator room.

Fuel oil system pipe shall be seamless steel Schedule 80 ASTM A106 or A53. Galvanized pipe and fittings shall not be used. The Contractor shall fabricate and install a FO manifold, generally as shown and located in Reference (V). Final location for FO manifold to be approved by TxDOT Representative.

Flexible hose assemblies shall be installed at the fuel oil connections for the generator and EDG engines. The hose assemblies shall have 37 degrees SAE flare swivel fittings on both ends. The hose shall be flame resistant and shall meet the requirements of U.S. Coast Guard 46 CFR 182.720(e) and SAE J1942/J1527. The hose assemblies shall not be less than 9 inches in length or more than 24 inches in length.

Remote operators actuated from the Car Deck shall be provided for the shutoff valves located at the fuel oil tanks.

## 261.2 FUEL FILL/TRANSFER SYSTEM

The fuel oil storage tank shall fill through a filling connection on the starboard side "B End" only, located on the main deck near the bulwark inside of the service box detailed in Reference (JJ). The storage tank shall have a separate 2.5 in fill pipe penetrating the side of the tank as near as practicable to the tank top. The fill terminal shall be an extension of the fill pipe fitted with ball valve and 2 1/2" seal fast dry-disconnect coupling-adaptor x female NPT made by Seal Fast Inc., part number 622A-200 or equivalent as approved by TxDOT, quick connect with stainless steel caps.

The fuel transfer system shall be fitted with two electric motor driven gear pumps to provide 100% redundancy. The transfer pumps shall have integral, adjustable relief valves. A simplex strainer with stainless steel body and basket shall be fitted in the storage tank suction pipe. Two oil/water separator filter units, Parker DVX1 or equal, shall be installed for fuel polishing.

Prior to connecting the engines, the fuel oil service piping shall be flushed in its entirety using a high velocity heated oil flush. Installed filter assemblies shall be bypassed during flushing. The system shall be flushed to an ISO 4406 16/12 cleanliness standard. Cleanliness test reports shall be submitted to TxDOT's Representative for approval.

Spare filters of each size and type shall be provided for two (2) complete change outs of all fuel oil filters installed on the vessel. This is not to be included in the cost of spares.

## 262 LUBE OIL SYSTEMS

Provide lube oil and waste oil piping systems as shown in Reference (W) and as described herein.

Lube oil storage tanks shall be clean and free of dirt, debris, paint, rust, or primer on their inside surfaces prior to filling. After TxDOT's inspection and approval and prior to delivery, clean lube oil tanks shall be filled with the oil appropriate for the equipment served.

Drip pans with drain valves shall be provided to collect normal oil leakage under pumps, filters, and other similar equipment subject to leakage or regular maintenance. See Section 500.5 for details.

### 262.1 MAIN PROPULSION LUBE OIL SYSTEM

Each diesel engine shall have its own self-contained lube oil system with attached pumps, oil cooler, strainers, and filters. Engine lube oil alarms and sensors shall be as required by Sections 233 and 430.

Engine lube oil storage shall be provided by a 1,000-gallon steel storage tank as shown in References (W) and (RR). The location of the tank shall be as shown in Reference (C). The lube oil tank shall be filled from a filling connection on the starboard side "B" End, located inside of the service box detailed in Reference (II). The deck fill connection shall be 1 1/2-inch pipe, fitted with a ball valve and Camlock fitting with lockable dust cap as shown in Reference (II).

An electrically driven gear pump shall be installed for transfer of clean oil between the storage tank and generator engines via a lube oil manifold and piping system connected to each propulsion generator. A flow meter at the discharge of the pump shall be provided to measure oil delivered.

A 1-inch lube oil replenishment line shall be installed between the lube oil manifold and each propulsion generator. An isolation valve and a flexible hose shall be installed at the connection to each generator engine sump.

The lube oil manifold shall also be fitted with a 1" spigot connection. A drip pan shall be provided under the spigot connection. The Contractor shall size and locate the drip pan with adequate clearance to allow the placement of a 5-gallon bucket underneath the spigot.

Each engine shall be filled with clean lubricating oil prior to tests and trials. After completion of sea trials, and just prior to the ship's delivery, lube oil shall be drained for all generator engines, all filter elements replaced with new, and the engines refilled with lube oil. The lube oil brand and type shall be chosen by TxDOT and approved by the engine manufacturer.

Spare filters of each size and type shall be provided for six (6) complete change outs of all lube oil filters installed on the vessel. This is not to be included in the cost of spares.

## 262.2 WASTE OIL SYSTEM

The Contractor shall provide waste oil tank as shown in References (W) and (RR). The waste oil tank shall be fitted with a 3-inch vent line terminating in the containment above the Car Deck, a 2-inch suction line terminating 1 inch from the bottom of the tank, and a 1 1/2-inch fill line at the top of the tank. An access and inspection manhole shall be provided at the top of the tank.

An air operated double diaphragm pump shall be provided, and the system configured so that the pump can take suction from the waste oil manifold and transfer oil to the waste oil tank or from the waste oil tank, transferring oil to the deck discharge.

A 1 1/2-inch waste oil suction line shall be installed between each propulsion generator sump and the waste oil manifold. An isolation valve and a flexible hose shall be installed at the connection to each generator engine sump. The waste oil drain piping shall be entirely separate from the clean lube oil piping.

The deck discharge connection shall consist of a of 2-inch pipe fitted with a ball valve and Camlock fitting with lockable dust cap as shown in Reference (II).

### 262.3 VOITH LUBE OIL SYSTEM

Each eVSP has an integrated lube oil and control oil system with shipyard provided piping provided between the eVSP unit, it's associated HPU, and an elevated oil head tank. The Contractor shall install the eVSP lube oil system piping in strict accordance with the manufacturer's requirements.

Two (2) 165 gallon VSP lube oil storage tank shall be provided as shown in References (W)and (RR), one located near each eVSP. Both VSP tanks shall be filled from a filling connection located inside the containment box detailed in Reference (II). The deck fill connection shall consist of a 1-inch pipe fitted with a ball valve and Camlock fitting with lockable dust cap.

A rotary vane hand pump shall be provided to facilitate transfer of oil from the VSP oil storage tank to the VSP.

## GROUP 300 - ELECTRICAL

### 300 ELECTRICAL PLANT GENERAL

The Contractor shall provide a complete electrical system, including wiring, equipment, software, documentation, and commissioning as described in this Specification.

#### 300.1 ELECTRICAL SYSTEM DESCRIPTION

The electrical power plant installation shall include several primary facets including: 1) Electric propulsion system including diesel generators, battery energy storage systems, DC bus switchboards, and propulsion variable frequency drives; 2) ship's service electrical system including inverters, transformers, ship service switchboards, and distribution panels; 3) emergency power and lighting system including emergency generator, emergency switchboard, transformers, and emergency distribution panels; 4) 12V DC and 24V DC battery, battery charger, and distribution systems for various low power DC loads. The electrical systems shall be based on a Siemens Blue Drive PLUSC (BDPC) solution.

The core of the Siemens Blue Drive PLUSC system is a DC switchboard to which generator sets, energy storage system (ESS) batteries, propulsion motors, ship service transformers, braking resistors, and extensive automation is connected. The DC switchboard is split into two halves which are interconnected by a solid state overload protection device known as an Intelligent Load Controller (ILC). The ILC is an autonomous high speed semiconductor device capable of detecting and effectively limiting and interrupting a short current in case of a short circuit in one of the DC link bus bars. It will ensure selectivity on the DC link bus bar level. The Blue Drive PLUSC DC switchboard consists of a series of cabinets, each one of which connects to a major external component such as generator, ESS, or propulsion motor. A multitude of other supporting components are also packaged within the cabinets. The DC switchboard components will be liquid cooled and installed on a foundation within the EOS.

Energy is supplied to the BDPC switchboard by a combination of diesel generators and ESS batteries; the incoming power from each generator set is rectified to a variable DC link voltage by a liquid cooled diode rectifier in the generator incomer section. The direct current energy is routed to the consumers depending on demand and available supply. Each propulsion eVSP thruster unit can be supplied by one of two inverters within the BDPC switchboard; there is one inverter for each thruster on each side of the split bus. There being two thrusters, there are four propulsion inverters. A transfer switch for each eVSP power supply is located below one of the Engine Room ladders.

The two Clean Grid Converters within the BDPC switchboard supply the 480V 60 Hz ship service bus via a pair of redundant transformers. The ship service switchboard features a split bus with interconnecting circuit breaker; one transformer feed supplies each side of the bus. The shore power inlets supply the ship service switchboard via a shore power transformer and transfer switch. A bus tie control and interlock function maintains continuity of power while preventing unsynchronized paralleling. Each side of the ship service switchboard has a feed to the emergency switchboard. Each side of the 480V ship service switchboard additionally supplies the 208/120V ship service switchboard via a pair of transformers and an automatic transfer switch.

The emergency switchboard receives power from one of the two feeds from the ship service switchboard or from the emergency generator. A control and interlock system ensures that power is

supplied from only one source at a time. The emergency supply distributes power to emergency bus loads, as well as to the 208/120V emergency switchboard via a pair of redundant transformers and an automatic bus transfer switch.

The BDPC system features two uninterruptible power supplies (UPSs) which produce 230V single phase 60 Hz power to supply control and monitoring components of the BDPC system. Several other sets of battery chargers, batteries, and distribution panels are located throughout the vessel to supply 12V and 24V DC loads. These include for generator set and emergency shutdown system control power, eVSP control power, rescue boat outboard motor starting, navigation and communication electronics, the general alarm system, the public address system, and emergency generator starting.

The BDPC system is controlled by an overall Integrated Automation System (IAS) which performs power management, alarm and monitoring, user interface, and other functions. The power management system dynamically controls the generator set and ESS sources to match supply to load demand, limit the load on thruster motors, and manage ESS state of charge. The alarm and monitoring component supervises the machinery systems for deviations in operational parameters, and the operator interface component provides terminals for crew interface and control throughout the vessel. Other functions such as data logging and remote diagnostic and troubleshooting are incorporated into the IAS as well. Additional ancillary automation components such as automatic voltage regulators (AVRs) and engine control units interface with the IAS to fulfil specific needs.

### 300.2 GENERAL REQUIREMENTS

The Contractor shall provide and install an electrical system which is complete and functional in all respects and accepted by ABS and USCG. Items or work which are not explicitly identified within the Specifications or ABS Reviewed Drawings, but which are necessary to support other identified work or are necessary to produce a complete and functional system, shall be provided as part of the Contractor's work scope. The Contractor is cautioned to review and understand the complete scope of supply intended to be provided by Siemens. All necessary cabling, wiring, penetrations, connectors, and all other equipment, material, and labor necessary for the complete installation and commissioning of the system that is not otherwise provided by Siemens shall be the responsibility of the Contractor.

The Contractor shall maintain a continuous record of changes in electrical load conditions due to design development throughout the Contract period. Electrical load changes shall be reported to TxDOT and any other interested parties in an electrical loads analysis updated by the Contractor at least every 90 days. Any changes to circuits should be approved by TxDOT.

The Contractor shall maintain a continuous record of changes in electrical distribution architecture due to design development throughout the Contract period. Changes to system architecture or layout shall be reported to TxDOT and any other interested parties in a one line diagram at least every 90 days. Component sizes, quantities, configurations, arrangements, capacities, and ratings shall be updated as necessary to provide a complete, functional, and regulatorily approved system. Any changes to circuits should be approved by TxDOT.

The Contractor shall perform voltage drop calculations for the loads supplied by the AC systems identified in Reference (X) and the DC systems identified in Reference (SSS); the Contractor shall update the cable sizes accordingly to maintain voltage drop within regulatorily specified limits. The specific load

identification, load size, panel position, cable size, and cable length shall be updated at most every 90 days throughout the contract period, and the results shall be submitted to the Owner for review.

For electrical systems, a plasticized, reduced sized copy of the final as-built electrical one-line diagram shall be provided and mounted in a frame in the vicinity of the corresponding switchboard.

Circuit design schematics shall be mounted on the inside cover of motor controllers along with other pertinent system data such as overload heater and fuse sizes.

The arrangement and installation of the electrical equipment shall be generally as shown on the ABS Reviewed Drawings. Equipment not shown shall be located subject to the approval of TxDOT.

The Contractor shall be responsible for balancing single phase loads between the three phases of the ship's service distribution system. Each phase of the system shall operate within 15% of average current when the vessel is operating under cruise condition. Cable and circuit breaker sizing shown on the drawings is for guidance only. The Contractor shall be responsible for final design sizing in accordance with the applicable regulatory requirements. Where mechanical equipment is redundant, such as with chillers or HVAC air handler units, the contractor shall ensure that the equipment is split evenly between separate ship service distribution buses.

Electrical equipment and materials shall be of types suitable for marine application in the services intended, and shall operate under expected conditions of temperature, vibration, roll (30 degrees from vertical), and pitch (5 degrees from horizontal) of the vessel.

Equipment requiring external wiring shall have suitable terminal strips or blocks, lugs, or studs with solderless terminals to which the Contractor shall make the connections.

The maximum allowable temperature rise for any equipment or wiring shall be in accordance with the applicable regulations. In general, temperature rise shall be based on an ambient temperature of 45°C in non-air conditioned spaces and 40°C in air conditioned spaces. Rotating machinery shall be rated for operation in ambient temperatures of 50°C.

Waterproof junction boxes, receptacles, and switch enclosures in locations subject to the weather shall be NEMA Type 4X brass, bronze, or 316 stainless steel. Other enclosure ratings shall comply with regulatory requirements based upon their service and location.

Electrical equipment, cabling, and spare parts shall be suitably protected against corrosion, moisture, mold, or other destructive agents to which the vessel may be exposed during normal operation. In general, the equipment shall be finished to suit the space in which it is installed. For painting requirements, see Section 631 of this Specification.

The Contractor shall ensure that positive grounding is provided for the frames or cases of permanently installed generators, motors, controllers, light fixtures, enclosures, instruments, and other electrical equipment. Grounding straps shall be installed as necessary. Refer to Section 320 for detailed requirements for grounding.

Electrical equipment enclosures, devices, cable penetrations, and mountings shall provide the degree of enclosure (IP rating) as required by USCG regulations and ABS requirements. Enclosures in weather locations shall be constructed of 316 stainless steel.

Nameplates, labels, and markings shall be provided in accordance with 46 CFR and IEEE-45 requirements. Refer to Sections 304 and 602.

## 302 MOTORS AND CONTROLLERS

### 302.1 EVSP PROPULSION MOTORS

The propulsion motors shall be supplied by Voith and shall be integral to each eVSP unit. They shall be three-phase 72 pole permanent magnet synchronous liquid cooled type. Rated output power shall be 1850 kW at 83 RPM with a rated voltage of 640 VAC at 49.8 Hz. Motors shall feature IP44 ingress protection and class F insulation. The motors shall have the capability to operate at between 75 and 86 RPM and between 0 degrees C and 45 degrees C.

The motors shall be inverter duty rated with voltage slope 6.0 kV/us at 1700 V max peak voltage and 1.3 kV/us at 2500 V max peak voltage. Inverter switching frequency shall be 2.5 kHz or greater.

Each motor shall be able to accommodate 200 liters/min of cooling liquid at 1.5 bar and 38 degrees C.

### 302.2 SHIP SERVICE MOTORS

Motors shall be of best quality standard commercial marine type, meeting the applicable requirements of the USCG. Motors shall be of one manufacturer to the maximum extent possible. Exceptions are motors integral to packaged machinery items and small fractional horsepower units.

Motors shall be IEEE-45 where identified elsewhere in this Specification or in the ABS Reviewed Drawings; refer also to Sections 500. Motors in the engine room and VSP unit room shall be rated for 50°C ambient temperature. Unless otherwise noted, motors shall not exceed 1750 rpm.

Unless otherwise defined in this Specification or the ABS Reviewed Drawings, when describing specific equipment motors, 3/4 horsepower and larger shall be 3-phase, 480 VAC, 60 Hz. Motors smaller than 3/4 horsepower may be single phase, 120 VAC, 60 HZ. Motors shall be AC squirrel cage induction type, designed for continuous duty. Motors, unless otherwise defined, shall be NEMA Design "B" torque characteristics. Electric motor continuous duty service factors shall be a minimum of 1.15 with Class F or better insulation. Motors in frequent or near continuous operation shall meet or exceed NEMA Premium Efficiency ratings.

All motors shall be suitable for full voltage across the line starting. Locked rotor and breakdown torques and locked rotor currents shall be as specified in the NEMA standards for the design application.

All motors frames shall be adequately grounded to the hull per the requirements outlined in Section 320.

Motors shall be TEFC unless located within axial fans, where they may be TEAO. Motors shall have a marine grade corrosion resistant coating. Motors shall be inverter duty rated when controlled by variable frequency drives.

Each motor shall be fitted with a nameplate of corrosion resistant material marked permanently with the following information:

- Manufacturer's type and frame designation
- Rated horsepower
- Rating classification
- Design ambient temperature
- Temperature rise at rated load
- RPM at rated load
- Voltage
- Amperes at rated load
- Number of phases
- Frequency
- Service Factor if above 1.0
- Code for locked rotor KVA on motors 1/2 hp and larger in accordance with NEMA standards

The Contractor shall provide a motor data booklet to TxDOT upon delivery of the vessel. The booklet shall list all electric motors throughout the vessel. The booklet shall contain the following information for each motor:

- Complete nameplate data
- Location of each motor on the vessel
- Motor service and circuit number
- Manufacturer's name, address, local representative

### 302.3 VARIABLE FREQUENCY DRIVES

All variable frequency drives (VFDs) shall be of a commercial off the shelf design, suitable for a marine environment and approved, built, tested, and certified by ABS. The drives will have local touch pad control panels for diagnostic and manual operation and shall be capable of standalone operation. The system design shall ensure that the total harmonic distortion in the power system and the VFD's effect on the power distribution system is within Class and Regulatory limits under all operating conditions. Any necessary special cabling or installation requirements shall be included as part of the scope of supply.

### 302.4 MOTOR CONTROLLERS

Each motor controller shall be fitted with a disconnect switch interlocked with the door. The disconnect switch shall open all phase conductors and shall be lockable in the open position. Each door shall be fitted with green start and red stop push buttons and indicator lights, overload reset button, and for essential services, amber overload trip indicator light in the cover. Each motor controller shall include three phase digital ammeter, data interface receptacle, and local/remote and fast/slow/off selector switches as necessary. Motor controllers shall be labeled with service, circuit number, voltage, and manufacturer's nameplate. Each control and indicator shall be labeled.

Each motor controller will have two NO and two NC spare control contacts. Manual starting switches may be used for all fractional horsepower motors. These switches shall have a quick-make quick-break mechanism and shall provide thermal overload protection to the motors, except where such a protection is built into the motors. These switches shall be in waterproof corrosion resistant housings where located in machinery spaces, weather, or areas subject to dampness.

All motors, other than fractional horsepower motors unless otherwise specified, shall be provided with magnetically operated controllers. The complete starter shall be housed in a marine type corrosion resistant drip-proof enclosure, suitable for bulkhead mounting. The enclosures shall not be supplied with knock out sections. Control circuit voltage shall not exceed 127 V AC, 60 Hz single-phase, and shall be supplied from each motor circuit by its own double wound control power transformer with fused or circuit breaker protected primary and secondary windings.

All starters and control components shall be capable of satisfactory operation when inclined as much as 30 degrees in any direction. Design ambient temperature shall be 50°C. Thermal overloads shall be of the ambient temperature self-compensating, adjustable range type. Motor starters started and stopped automatically by control devices, such as pressure switches, shall include a selector switch with positions marked "manual", "off" and "automatic", which are connected to function accordingly.

Motor starters for motors which can be started and stopped from remote locations shall include a selector switch with positions marked "Local" and "Remote" and connected to function accordingly. A suitable warning label shall be affixed to the motor starter and motor. Starters shall be installed in accordance with Reference (AA), or if not shown on Reference (AA), as conveniently near their respective motors as possible. If a starter must be installed at a point from which the motor served is not visible, a separately mounted start-stop push station shall be installed near the motor or in an Owner approved location.

A wiring diagram of each controller shall be permanently mounted inside the controller cover in a waterproof and oil proof sleeve. Label plates shall be engraved phenolic with 5/8" letters, label plates shall be sized to suit inscription, designating the motor served, system, feeder circuit and full load rating. Secure with two screws.

### 302.5 EMERGENCY SHUTDOWNS

Remote emergency shutdown systems shall be provided and installed for the fuel oil, lube oil, hydraulic oil, ventilation, battery ESS, and generator set systems. Each shutdown system shall include pushbuttons, relays, contacts, enclosures, nameplates, labels, indicator lights, terminal strips, fuses, cable glands, cabling, wiring, cable securing components, and all other components necessary to produce a functional system.

The intent of the system is to provide the ability to shut down or disconnect identified equipment from outside the affected space during an emergency situation. The systems shall comply with 46 CFR 111.103 and ABS River Rules requirements. The system shall use undervoltage trip functionality, i.e., interruption of power to the emergency shutdown system shall trigger the shutdown of the connected equipment. All emergency stop pushbuttons shall be pull to stop, push to reset type and shall include guards to prevent inadvertent operation. Each shutdown station shall include nameplates for buttons and indicators, and operation instructions. Shutdown systems shall generally draw power from the vessel's 24V battery banks. Each shutdown shall require positive action from the operator to reset and restore the system to operation.

The Contractor shall develop the complete system and provide a system schematic drawing, parts list, and cut sheets of all components. The design shall be submitted to the Owner for review and acceptance, and to USCG and ABS as necessary for approval.

Provide and install the following emergency shutdown systems. Each system shall shut down the listed equipment at a minimum, as well as any other equipment necessary to satisfy regulatory requirements and the intent of this specification.

- 1) Machinery Space Ventilation: Engine Room Supply Fans 1 through 4, Engine Room Exhaust Fans 1 and 2, #1 Comp Supply Fan, #8 Comp Supply Fan, EOS air handlers, fire dampers for supplies and exhausts to #1 Comp, Engine Room, and #8 Comp. Shutdown buttons shall be located at the "A End" Pilothouse, "B End" Pilothouse, EOS console, and "B End" Engine Room Stairway at the Main Deck level. This shutdown system shall use a single button at each station, but the system shall be segregated into two circuits electrically so that equipment is divided equally on both. The intent is that an unintended wire disconnection will not cause complete shutdown of the machinery ventilation. Release of the fixed gas firefighting system within the Engine Room shall also activate this shutdown system.
- 2) Fuel Oil, Lube Oil Shutdown: Fuel oil transfer pumps 1 and 2, lube oil pump, waste oil pump. Shutdown buttons shall be located at the EOS console, and at the "B End" Engine Room Stairway at the Main Deck level. Release of the fixed gas firefighting system within the Engine Room shall also activate this shutdown system.
- 3) ESS #1: ESS #1 air handling unit, ESS #1 pre-process heater, ESS #1 post-process heater, ESS batteries within ESS #1 room, ESS #1 room exhaust fan, fire dampers forming the boundary of ESS #1 room. The ESS #1 offgas exhaust fan shall not be shut down by this circuit. Shutdown buttons shall be located at the "A End" Pilothouse, "B End" Pilothouse, EOS console, and #4 Comp. Release of the fixed gas firefighting system or water mist fire suppression system within the ESS #1 room shall also activate this shutdown system.
- 4) ESS #2: ESS #2 air handling unit, ESS #2 pre-process heater, ESS #2 post-process heater, ESS batteries within ESS #2 room, ESS #2 room exhaust fan, fire dampers forming the boundary of ESS #2 room. The ESS #2 offgas exhaust fan shall not be shut down by this circuit. Shutdown buttons shall be located at the "A End" Pilothouse, "B End" Pilothouse, EOS console, and #5 Comp. Release of the fixed gas firefighting system or water mist fire suppression system within the ESS #2 room shall also activate this shutdown system.
- 5) Above Deck Ventilation: Salon 10T A/C units (qty 2), Salon Deck head exhaust fans (qty 2), Crew Space head exhaust fan, Pilothouse 3T A/C units (qty 4), fire dampers forming the Salon boundary. Shutdown buttons shall be located at the "A End" Pilothouse, "B End" Pilothouse, Crew Space, and EOS console. Nothing related to the E-Gen Room or emergency generator shall be shut down by this circuit.

## 302.6 DISCONNECTS

Disconnects in the weather shall be of stainless steel construction in NEMA 4X enclosures.

## 303 ELECTRICAL CABLE

### 303.1 GENERAL CABLE REQUIREMENTS

Provide and install cabling, supports, securing, penetrations, seals, labels, and other components as necessary to produce a fully functional electrical system. All cable in the weather shall be bronze armored, imperviously jacketed marine cable. Cable in interior spaces shall generally be unarmored with impervious jacket. All cable shall be constructed in accordance with regulatory agency requirements. Conductors are to be of tinned stranded soft annealed round copper wire, without weld, splice, or joint

throughout the entire length. Aluminum conductors or armor shall not be used. The minimum size for power and lighting cable shall be #14 AWG gauge.

Cable provided to connect to equipment within the Siemens scope of supply shall comply with Siemens' cable specification; this includes generator feeder cables and cables powering the eVSP drive motors.

Cable purchased in bulk by the Contractor or the Contractor's direct electrical subcontractors shall be low smoke zero halogen type (LSZH), TriCab or equal. The intent is to use as much LSZH cable as reasonable, while recognizing the outsized burden that would be imposed by requiring LSZH cable from every equipment and system vendor. Special electronic cables shall be provided as recommended by the respective manufacturer.

All cable connections shall be made within equipment enclosures or appliances with the terminal blocks, lugs, or studs. Terminal blocks shall be non-flammable and moisture proof with barriers between terminals. Enclosures and their penetrations shall have IP ratings appropriate for their location and service.

### 303.2 CABLE INSTALLATION DESIGN AND PLANNING

The Contractor shall employ a methodical approach to designing and planning the cable installation. This shall incorporate the cable trays and cable run geometry, bulkhead, deck, and fire boundary penetrations, non-structural penetrations, structural cutouts and reinforcements, avoidance of interferences, provision for maintenance and access clearances of other equipment, separation of power and signal cables, and any other relevant design considerations. The Contractor is advised that a diesel-electric-hybrid vessel requires substantially more cable than a diesel-mechanical vessel. The Contractor may refer to Reference (BB), but shall acknowledge that Reference (BB) does not represent a fully complete, developed, and detailed design.

The intent of this design effort is to produce an installation which avoids the following problems; this is not an exhaustive list:

- 1) Overcrowded cable penetrations through watertight and fire rated boundaries and non-tight openings. All cable penetrations shall include capacity for lifecycle cable addition as described in section 303.4.
- 2) Overcrowded cable trays and ladders leading to unplanned double banking, poor securing, and inadequate separation between power cables and signal, communications, or network cables. Overcrowded individual cable clips holding more than four cables.
- 3) Routing cabling in violation of regulatory requirements, for example emergency power cables which are partially within the Engine Room but supply loads outside the Engine Room.
- 4) Cable routing which significantly impedes access to equipment or spaces within the vessel.
- 5) Cable routing which leads to pipe and duct routing bends, thereby introducing losses in the pipe and duct systems.
- 6) Inadequate separation of power cables and signal, communication, and network cables.
- 7) Cable runs with inadequate clearance to major structural members. At least four inches of clearance between cables and decks or bulkheads is necessary to allow cleaning and painting throughout the life of the vessel.
- 8) Cables installed with inadequate support and protection. This includes cables routed unsupported across multiple feet of open compartment, in contact with corners and edges of

structure and enclosures, through stiffener cutouts, through deck penetrations with inadequate kick pipes, and in contact with the edges of sheet metal or perforated metal linings of insulation and joiner systems. This also includes installing cables in areas in which they will be prone to being stepped on or used as hand holds when accessing equipment or adjacent areas within the vessel.

- 9) Cable trays and routes with inadequate bend radii for the cable installed.

The design and planning effort shall incorporate an accounting of cables to be installed aboard the vessel, their size and termination locations, required sizing and location of cableways, penetrations, and accommodation for future growth. The weight of planned cable shall be accounted and incorporated into the vessel weight estimate and stability calculations. This effort shall be maintained throughout the contract period and updated as the design is refined due to regulatory feedback, equipment details, or other causes.

The products of the design and planning effort shall be submitted to the Owner for review periodically through the contract period, at most every sixty days. The design products need not be formalized design documents nor detailed in every respect but shall be developed sufficiently to ensure a robust cabling system for the life of the vessel, and sufficiently to provide adequate direction to fabrication personnel.

The Contractor is encouraged to visit TxDOT's ferry vessel ESPERANZA "HOPE" ANDRADE commissioned in 2022 to inspect the cable installation.

### 303.3 CABLE INSTALLATION

Cables shall be supported in accordance with regulatory requirements. All cables shall be supported by hangers or cable trays/ladders spaced not more than 14" in a horizontal run or 18" in a vertical run. Cables shall be secured with 316 stainless steel banding at least 1/2" wide. Cables shall be single banked in general. Where double banking is unavoidable, cables shall be suitably derated.

All hangers in exterior locations shall be stainless steel 316L, including those for cable runs through the stairway trunks between the Main Deck and Salon Deck. Other cable hangers shall be coated steel, galvanized steel, or 316L stainless steel. Runs of more than four cables shall be supported by cable trays or cable ladders.

Runs of four cables of 3/4 inch diameter or less, or fewer cables of equivalent total cross-sectional area, may be installed with individual cable clips and welded studs. Cable runs of larger total cross sectional area shall be supported by cable hangers or cable trays/ladders.

Cable paths shall be routed around HVAC ducting and pipe runs to avoid introducing unnecessary losses to those systems. The piping and ducting shall have straight runs while the cabling shall bend around piping and ducting, as opposed to the opposite.

Cabling shall be routed to avoid areas prone to physical damage, vandalism by passengers, or other likely sources of damage. Cables shall not be in contact with edges or corners of structure, enclosures, or sheet metal lining or joinery systems. Cables shall not be routed through stiffener cutouts or installed in locations which will make them likely to be stepped on or used as hand holds for accessing adjacent portions of the vessel. Cables shall not be routed through frame openings unless in a cable tray specifically intended to be routed through a frame opening. Cables in spaces with linings or joinery

systems shall be concealed to the greatest extent practical. Cables which are subjected to possible mechanical damage shall be protected by metal guards. Likewise, cables subjected to possible moisture dripping shall be provided with sheet metal drip shields. Cables shall be concealed in spaces that require lining. Cables shall not be supported by gratings in machinery spaces. Cables shall not be installed in bilges or other places where liquids may accumulate, unless being run to equipment located in those spaces and in any event for as short a distance as possible.

Cable trays/ladders shall be installed to maintain clearance of at least four inches between the cable or tray/ladder and adjacent bulkheads, decks, or plate fields. Where these cable installations cross stiffeners, beams, or girders, this clearance may be reduced to two inches. The intent is to provide adequate clearance for cleaning, preparation, and painting of vessel structure throughout the life of the vessel.

Cables shall not be routed through bilges, i.e., lower than 18 inches above bilge level high water sensors. Simply being below the deck plate level is not considered to be the bilge.

Cables and cableway installations shall not interfere with commonly used walking paths or with access clearances or maintenance envelopes for other vessel systems or equipment.

Cables shall be installed with separation sufficient to avoid interference between power cables and control, signal, and network cable. Separation guidance of Reference (CC) shall be adhered to, as a minimum. Cables shall generally be installed in single banked configuration. Where double banking is necessary, cables shall be appropriately derated.

Where wiring terminations are made within enclosures, junction boxes, or equipment, sufficient slack shall be included in the wiring to prevent tension or mechanical load on the wire connections.

### 303.4 PENETRATIONS

The Contractor shall plan cable penetration types, sizes, quantities, and locations as part of the cable system design and planning effort described in section 303.2.

Provide and install appropriate approved penetration systems through watertight bulkheads and decks, fire boundary bulkheads and decks, non-tight openings, and enclosures. Penetrations systems shall be approved by USCG and ABS and shall maintain the integrity of the boundary which they penetrate. Multi cable penetrations may be of the compression block type as by Roxtec, the 'packing and sealant' type such as STI Marine MPACT Marine Firestop Sealant type, or a combination. Where fire boundaries are penetrated and an airtight seal for HVAC purposes is not necessary, for example at the midship bulkhead in the passenger Salon, STI Marine EZ Path MDM transit fixtures may be applied. Where individual cables require penetration, individual stuffing tube or cable gland fittings may be applied.

Regardless of the systems selected, each penetration shall be appropriate for the location, cable type, boundary type, and size and quantity of cables. All design and application factors such as pressure rating, temperature rating, and UV and sunlight resistance shall be accounted for. Cable penetrations shall be assembled in accordance with manufacturer's instructions, paying particular attention to required spacing between cables and between cables and penetration collars or frames.

Cable penetrations and the cableways leading to them shall be aligned to avoid excessively tight bending radii, chafing, kinking, or strain on cables, cable trays, or the penetration fittings. Unless specifically approved by the Owner, cables shall not be installed in the same penetrations as piping.

Cable penetrations for high power cables of the diesel electric hybrid propulsion system need not include capacity for future cable addition. This includes cabling for the BVES ESS battery systems, generator set feeders, eVSP propulsion thruster main motors and their selector switches, and ship service transformers. All other multi cable penetrations shall include capacity for cable addition throughout the life of the vessel. At minimum, each multi cable transit shall include capacity for the addition of 50% of the average size cable transiting through the penetration. Penetrations at primary cableways and at the EOS boundary shall include 50% capacity for additional cable installation. Where multiple of these additional capacity requirements apply, the requirement requiring the largest amount of spare capacity shall take precedence.

The requirements for additional capacity may be satisfied by providing reserve capacity within used penetration fittings, or by providing unused penetrations adjacent to the filled penetrations. If additional penetrations are provided, provisions for cableway additions leading to these penetrations shall be provided; these cableways shall have the ability to be added without disturbing coatings, insulation, or linings.

Cables for power and cables for control, signal, and network shall not share the same penetrations.

Where cables pass through non-tight structural openings, they shall be supported by cable hangers or clips within sufficient proximity such that the cables are not in contact with the edges of the opening. Holes for cable passage shall include collars if necessary for structural reinforcement.

Cable penetrations through decks in areas prone to kicking or other damage shall include kick pipes or trunks at least 12 inches tall.

### 303.5 CABLE LABELING

Cables shall be labeled with embossed tags secured to the cable by metallic banding. Tags shall be 316 stainless steel in weather locations and may be aluminum or 316 stainless steel in interior locations. Each cable shall be labeled at each enclosure, and at least once within each compartment through which the cable passes. Identifications shall match the electric one line diagram or specific system drawing.

Within enclosures, wires shall be identifiable by label rings, label tags, or by labeling of the terminals to which they connect.

### 303.6 PORTABLE CORDS

All portable and flexible cord shall be oil resistant thermoset jacketed, extra hard usage type "SOOW" and shall be provided with a grounding conductor. Examples are shore power cord, cord for rescue boat battery charging, and the portable leads on navigation lights.

### 303.7 EMERGENCY CABLING TRUNK

The Contractor shall install and secure cabling within the structural trunk between the EOS and #4 Comp as necessary to provide a functional and regulatorily compliant installation. This in general will include

emergency power, control, and communications cables, but may include other cabling. A watertight penetration shall be provided at the #4 Comp bulkhead and the trunk shall be insulated to provide an appropriate fire boundary.

### 304 ELECTRICAL DESIGNATION AND MARKING

All electrical equipment and conductors shall be fitted with identifying label plates and markings. Any special instructions and precautions shall be included on a separate adjacent plate. Label plates shall be provided and installed for switchboards and panelboards and all their components, motor controllers, remote control buttons and switches, special use receptacles, power conversion equipment, battery banks and chargers, and any other electrical components for which the purpose is not immediately obvious.

Lettering on label plates shall be of sufficient size as to be read from a reasonable distance away and subject to approval of TxDOT. Blank nameplates shall be provided for spare feeder switches and circuit breakers. Switchboard and distribution panel buses shall be stamped in a readily visible location with their polarity or phase identifications.

Power distribution panels shall have nameplates with the following information:

- a) Space, apparatus, or circuits controlled.
- b) Voltage, number of phases, ampere capacity.
- c) Designation.
- d) Feeder designation.

Each circuit breaker on a switchboard shall have a label plate showing the circuit designation, load name, the circuit breaker trip setting, and circuit breaker frame size.

Label plates shall be made from laminated phenolic, white text on a black background. Inscriptions shall be clear and concise with a minimum amount of abbreviation. Standard marine abbreviations shall be used. Lettering shall not be less than 1/8 inch in height with primary information in letters of larger size than secondary information.

Equipment notation shall be relative to the ends of the vessel's "A End" and "B End". Redundant equipment shall be labeled as such. Where redundant equipment is located in the same end of the vessel, numerical notation shall be used, i.e. A-1, A-2, etc.

### 311 DIESEL GENERATORS

This section shall be applied in conjunction with the generator set engine requirements described in Section 233. Requirements for the alternator (the electrical machine) portion of the generator set are contained herein; requirements for the diesel engine are in Section 233.

The Contractor shall provide and install four alternators as part of the generator set packages. The alternators shall be Siemens 1DC04, or Siemens specified equal. Each generator set shall consist of an ABS-certified diesel engine and ABS-certified alternator with brushless exciter, all mounted on a common fabricated steel base frame, with a full-length drip-pan integrated into the skid frame under both engine and generator. The generator set shall be fitted with resilient mounts and furnished

complete with the equipment listed below. Scope of supply shall be as described in the Siemens BDPC propulsion system proposal.

The generator sets shall be supplied with all components, software, and interfaces necessary to support remote automated control by the power management system.

The alternators shall be air cooled, 690 VAC, 3-phase, three wire, ungrounded, 60Hz, 614 kWe (prime) at 45°C, 0.80 pf 1800 rpm with permanent magnet generator (PMG) exciter. The unit shall have double windings with 10% overload rating for 1 hour in every 12. The alternator shall be drip-proof protected to IP23. Windings shall have Class F insulation. Bearings shall be roller type not requiring external lubrication or cooling pumps.

Generators shall be provided with approved voltage regulators, Basler DECS-150 or equal, with suitable electronic governors with hydraulic actuators on the engines and other necessary equipment for a complete installation suitable for continuous operation 24 hours daily in single or parallel operation and EPA Tier 3 emissions standards. All generators will be self excited brushless machines, suitable for variable frequency drive systems, and the generators will have a harmonic output less than the ABS required level.

All diesel generators shall be able to run in parallel, load share in static and dynamic operating conditions, and be set up to have similar response characteristics for suddenly applied and shed loads, without becoming unstable within their operation power ranges.

A control panel for each generator shall be provided adjacent to each generator set. The panel shall contain a mode selector switch, speed control, emergency stop button, and interactive engine control screen which displays engine operating parameters, alarm status, event log, and other information.

All voltage regulators will be Basler DECS-150 and able to maintain voltage within the limits imposed by ABS and USCG and the power management system requirements. They shall control and share reactive power across each machine, have adjustable voltage droop and be able to be interfaced with the governors and power management system.

Protection covers shall be provided for all live and rotating parts. The generators shall be directly coupled to the engine and the diesel-generator combination shall be aligned and balanced as a unit for smooth vibration-free operation. The diesel engine vendor shall prepare and submit a torsional vibration analysis verifying that vibrations will not be problematic under operating conditions. The results of the torsional vibration analysis shall be considered when selecting the coupling between engine and generator, and the vibration isolation mounts for the generator set units.

The alternator connection box shall be arranged for cable entrance from the bottom of the side nearer the EOS, as shown in Reference (BB), unless otherwise approved by TxDOT. Since the gensets face the ends of the vessel, this will require two generators with connections on the left side, and two generators with connections on the right side.

The alternator shall be painted to match the generator engine; masking during painting shall be sufficient to prevent paint from entering the machine.

Each alternator shall be fitted with a strip heater and provision for automatically heating whenever the generator is not operating. Two RTD type temperature sensors shall be fitted per winding and per bearing.

Prior to installation aboard the vessel, the generator sets shall be stored in a dry, climate controlled warehouse to prevent weather or condensation damage.

Generator sets shall be delivered with all necessary documentation, including technical manuals, ABS certificates, factory acceptance testing records, emissions certifications, and warranties.

### 312 EMERGENCY GENERATOR

The emergency generator is to be a 150kW, 480VAC, 60 Hz, 3 phase electric machine driven by a diesel engine. The package shall consist of a John Deere Model 6068AFM85 diesel engine coupled to a Marathon Electric Magnaplug alternator, model 431PSL6254-MARC. The generator set shall be skid mounted along with a radiator and engine driven cooling fan. The skid shall be mounted on vibration isolation mounts to a structural foundation within the EGen Rm. Air ducting shall extend from the radiator discharge to the adjacent fire damper penetration in the deckhouse bulkhead.

The emergency generator shall feature 1800 RPM speed, 0.80 power factor rating, IP23 enclosure, class H4 insulation, 50 degree C ambient air temperature, and 95 degree C temperature rise capacity. The installation shall be complete with built-in brushless exciter and automatic voltage regulator to supply 2.2 amps of field current at 55 volts. The generator set shall feature a control panel which will permit automatic starting and stopping control by the emergency switchboard automation system.

The emergency generator set shall be supplied with all accessories and supporting systems necessary for a complete, operational, and regulatorily compliant system, including air filter, exhaust piping, silencer, insulation, pipe hangers, all hoses, filters, valves, guards, and other components. Additionally, the broader emergency power system shall be equipped with supporting components and subsystems for fuel, combustion air, cooling, control, starting, fire suppression, et cetera. The emergency generator engine block heater or jacket water heater as well the electric machine's anti-condensation heater shall each be supplied by a dedicated circuit as shown on Reference (X); these heaters shall only operate when the emergency generator is shut down. The combustion and cooling air supply and exhaust louvers shall be configured to be closed except when the emergency generator is actually in operation.

Any deviation of vendor and model number noted above must be brought to the attention of TxDOT before acquisition and must be approved by TxDOT. All accessories to the emergency generator system before the emergency switchboard must match the current TxDOT fleet to the highest degree possible.

The emergency generator set shall have electronic governor with isochronous control. The emergency generator and all emergency electrical gear shall operate satisfactorily under all conditions of trim, list, and motion as defined in ABS Rules and USCG Regulations.

Blue, flashing running indication lights shall be installed in the main deck overhead on both "A" and "B" ends of the vessel to notify crew that the emergency generator is running.

See section 324.3 for emergency generator sequence of operations.

## 313 NON-PROPULSION BATTERIES AND ACCESSORIES

### 313.1 GENERAL

The Contractor shall provide and install batteries, battery chargers, monitoring and alarm units, switches, fuses, battery boxes, cabling, and supporting components as necessary to provide fully functional systems and satisfy regulatory requirements. These battery systems shall support auxiliary DC and backup power loads. This section addresses lead-acid based 12V and 24V systems; the lithium-ion based battery energy storage systems are outlined in section 315 and Siemens' documentation. Battery systems shall be provided generally as shown in Reference (SSS).

See section 300.2 for requirements for voltage drop calculations and cable sizing.

Each bank shall be charged by a battery charger suitably sized for the calculated load, and each bank shall be protected by a suitably sized fuse or circuit breaker located in an appropriate enclosure. Locate batteries and battery chargers to minimize cable lengths to their associated loads. The monitoring and control units associated with each battery charger shall be interfaced to the vessel integrated automation system to produce an alarm if the battery charger fails.

Battery box foundations on the Bridge Deck or other weather locations shall be elevated off the deck by at least six inches.

The emergency generator shall be equipped with starting batteries sized per the generator set vendor's recommendations; these batteries shall additionally be sized to provide the number of starts required by USCG and ABS requirements at a temperature down to 30°F. The emergency generator set starting batteries shall be equipped with a battery charger, monitoring and control unit, battery box, foundation, disconnect switch, and all other necessary components.

### 313.2 BATTERIES

Batteries shall be sealed valve regulated gas recombination type, EnerSys Odyssey Extreme Series PC2250 or equal. Batteries shall feature threaded stud marine terminals and integrated lifting handles. Each battery shall include a manufacturer's label showing its make and model number, electrical capacities and specifications, weights, and date of manufacture.

Each rescue boat shall be equipped with a battery as specified or provided by the rescue boat manufacturer.

Batteries shall be installed in acid resistant vented battery boxes, which shall in turn be secured to structural foundations. Each battery box lid shall be labeled with an engraved phenolic label plate indicating the bank name.

Various equipment items which include provisions for or would typically include dedicated backup batteries or UPSs shall be equipped with said batteries or UPSs. Examples are fire detection system, CCTV server rack, and navigation computers.

### 313.3 BATTERY CHARGERS

Battery chargers shall be as identified in Reference (Y) or equal.

The capacity of each battery charger shall be confirmed by the Contractor as part of the detailed design phase and as part of the periodic updates of the loads analysis and one line diagram outlined in section 300.2. The charging rate of each battery charger shall be sufficient to bring its associated battery from a fully discharged condition to 80% charge condition within a ten (10) hour period.

Battery chargers shall feature automatic three stage charging capability and shall have charge parameters adjusted for sealed lead acid batteries.

Battery chargers shall be mounted in interior locations as close as practicable to the batteries, generally in accordance with Reference (AA). Battery chargers shall be labeled per section 304.

The emergency generator starting battery bank shall be charged by a battery charger as identified in Reference (Y). The charging arrangement shall include a monitoring and control unit, NewMar PT-MCU, or equal, which shall interface with vessel integrated automation system to provide an alarm upon charger failure.

## 314 POWER CONVERSION EQUIPMENT

Power conversion equipment shall be provided and installed as required to produce a fully functional system.

All tools, software (two licensed copies minimum) and equipment required for diagnostics and maintenance of BDPC system and its supporting components shall be supplied as part of the equipment package. Software shall include capacity for additional functionality or operational parameters. Any necessary special cabling or connectors used for maintenance or diagnostics shall be provided as part of the Blue Drive PLUSC scope of work.

A priced list of recommended spares shall be provided by Siemens for TxDOT's information.

The BDPC system main power components shall be of a model and type currently in production for marine use with parts production planned for at least 10 years.

### 314.1 PROPULSION VFDS

The propulsion variable frequency drives shall be provided by Siemens to supply 1500 kW to each propulsion motor. The drives shall function by receiving power from the Blue Drive PLUSC DC bus and converting to a variable torque, voltage, and frequency three phase AC output through a liquid cooled IGBT inverter. The drive modules shall be able to supply all operational modes of the eVSP propulsion thrusters and their integrated motors as outlined in section 302.1. The variable frequency drives shall be supplied from the DC bus via motor operated isolators and fuses. The variable frequency drives shall be controlled by the power management system (PMS) and propulsion controls.

The primary control system will be PLC controlled and all alarms, controls and monitoring inputs and outputs will be achieved by data link compatible with the PMS, IAS, and propulsion control system equipment. The drives shall in addition have local touch screen control panels for diagnostic and manual operation, capable of standalone operation.

### 314.2 MAIN POWER COMPONENTS

Other components as indicated as included within the Siemens scope of supply shall be provided and installed. This includes equipment within the BDPC switchgear lineups as well as externally mounted items. The ILC, generator incomer rectifiers, capacitor banks, contactors, fuses, bus work, and other supporting control, metering, and cooling components shall be installed within the BDPC switchgear cabinetry.

The braking resistors, propulsion motor selector switches, and any other main power components shall be mounted externally to the BDPC switchgear lineup on substantial foundations integrated to ship structure as indicated on Reference (AA). These components shall be cabled into the BDPC system per the Siemens design documentation.

### 314.2 TRANSFORMERS

Each distribution transformer shall be a three phase dry type k factor rated with natural cooling and electrostatic shield between primary and secondary windings. Windings shall feature baked resin impregnated insulation and two Pt 100 RTDs per winding. Each transformer shall feature an anticondensation heater.

Transformers shall be packaged into coated steel enclosures of at least IP23 rating which shall be mounted on substantial foundations to ship structure. Mount transformers generally as shown on Reference (Z), ensuring adequate clearance for air flow all around.

Transformers shall be provided as following:

- 2ea 400 kVA Clean Grid Transformer from 570V to 480V, 60 Hz, delta-delta configuration. Two 2.5% FCAN and two 2.5% FCBN taps.
- 2ea 112.5 kVA Ship Service Power Transformer from 480V to 208/120V, 60 Hz, delta-wye configuration. Two 2.5% FCAN and four 2.5% FCBN taps.
- 2ea 75 kVA Emergency Power Transformer from 480V to 208/120V, 60 Hz, delta-wye configuration. Two 2.5% FCAN taps and four 2.5% FCBN taps.
- 1ea 225 kVA Shore Power Isolation Transformer from 480V to 480V, 60 Hz, delta-delta configuration. Two 2.5% FCAN taps and four 2.5% FCBN taps.

Further details and requirements may be found in the Siemens proposal for this vessel (Siemens Energy Inc., proposal SF221987605, Rev 01, Jan 17, 2023) or the Siemens specifications.

### 314.3 UNINTERRUPTIBLE POWER SUPPLIES

Two uninterruptible power supplies (UPSs) shall be provided and installed in the EOS. These shall supply control power for the BDPC vessel power system and emergency shutdown systems. Each UPS shall be based upon an Eaton HPO-1045369 platform. It shall accept 480V three phase input and produce 8kVA, 7.2 kW output at 230V single phase, 60 Hz. The UPS system shall be equipped with a 9 Ah 384V battery pack. Each UPS installation shall include a three phase isolation transformer, AQ Trafotek 1027067, or equal.

### 315 PROPULSION ENERGY STORAGE SYSTEMS

The Contractor shall provide and install two Energy Storage Systems (ESS) to support the functionality of the Blue Drive PLUSC main power system. Each ESS shall be located in its respective ESS space. See Reference (Z).

The core of each ESS is an array of lithium-ion nickel-manganese-cobalt batteries. These batteries shall consist of assemblies of cells packaged into battery modules. The battery modules are in turn fitted into a cabinet-based mounting and connecting rack system. The battery system shall have cell-to-cell propagation protection such that a cell going into thermal runaway shall not spread to adjoining cells. The cell-to-cell propagation protection shall be passive in nature having passed NMA RSV 12-2016, Propagation Test 1. The battery cabinets shall be deck mounted to a foundation in each ESS space and connected by shipboard cable to the BDPC switchboard. The ESS system includes supporting off-gas venting, liquid cooling, and monitoring and control systems.

The ESS cabinets feature a ducting system to collect and vent gas and combustion products to the exterior of the vessel as shown on Reference (KK). These gases and combustion products would be created in the event of cell thermal runaway, which would be considered a severe ESS failure. The ESS cabinets shall be mounted in a single lineup to facilitate connection of the off-gas ducts as well as the liquid cooling piping. The off-gas ducting system within the ESS cabinets shall connect to a Contractor supplied vent system which shall connect to the exterior of the vessel. The vent system shall be dedicated to the ESS; it shall not vent to the ESS space or other spaces. The vent system shall include an explosion-proof fan suitable for use in Zone 2 atmospheres, off-gas sensors, and a fresh air supply connection to provide an eductor/ejector effect in the vent ducting. The fan shall operate continuously and create a negative pressure within the off-gas ducting relative to the pressure within the ESS space. The fans shall be monitored by the IAS400 integrated automation system which shall produce an alarm in case of fan shutdown. The ducting shall be entirely constructed of structural gauge thickness or dimensional steel pipe, tube, or HSS and shall maintain an A-0 rating throughout. A vent system shall be provided for each ESS.

The ESS modules are liquid cooled to maintain safe temperature ranges, allow high charge, and discharge rates, and to optimize battery lifespan. The cooling system also functions as a passive safety layer on top of the passive cell-to-cell propagation protection to help ensure that a cell thermal runaway will not propagate to any neighboring battery cells. This system is controlled by the battery system controller. Each ESS is provided with a liquid cooling cabinet which mounts on the end position of the ESS cabinet lineup. The cabinet contains pumps, heat exchangers, and controls, and communications to maintain the ESS module temperatures. Vessel chilled water is piped to the cooling cabinet.

Each ESS installation includes a control and operator interface cabinet which shall be installed within the ESS space and connected to the ESS and IAS.

The Contractor's fabrication and installation sequence shall ensure that climate control is ensured for the battery modules and ESS spaces, and that condensation is not created during the contract execution period. The HVAC system shall be operational, and the ESS space shall be substantially weather tight prior to installation of the ESS modules and application of chilled water.

An explosion-proof gas detection system shall be installed with sensors in the outgassing ducting and within the ESS Space. See section 430.7. Each ESS space shall include door sensors and pressure differential sensors to the satisfaction of USCG and ABS.

Each ESS Space will also have a dedicated HVAC and ventilation systems, see Section 514.

## 320 POWER DISTRIBUTION

The distribution of electric power shall be in accordance with References (Y), (Z), (BB), (SSS) and the remainder of the ABS Reviewed Drawings. These plans are not intended to show the system in every detail but only to cover the principal features required for the power distribution system. All facilities and features required for the comprehensive and proper operation of the electrical apparatus and equipment for the vessel shall be provided in accordance with the intent of these Specifications.

The generator sets, ESS systems, propulsion thruster systems, BDPC DC bus, ship service 480V distribution, emergency bus 480V distribution, and shore power circuits shall be ungrounded. The ship service and emergency 208/120V distribution systems shall have their neutral points grounded at their switchboards.

All non-current carrying parts of electrical equipment and devices shall be grounded to the ship structure. Grounding of the equipment shall be accomplished either by the mounting bolts and foundations or separate grounding straps or conductors. Receptacle circuits shall include a conductor used to provide ground connection between portable equipment and vessel structure. Equipment mounted on insulating foundations such as vibration mounts or poured chocks shall include grounding straps to ensure bonding to vessel structure. Grounding continuity shall be tested for all equipment during commissioning.

The Contractor shall perform voltage drop calculations to ensure that allowable voltage drop is not exceeded at each consumer. These calculations shall be submitted to TxDOT for review and shall also be submitted to USCG or ABS as required.

## 321 SHORE POWER

A shore power connection shall be installed on each end of the vessel. Each shore power connection shall accept a 480 VAC 3-phase, three wire supply with a ground conductor connection. Each of these connections shall be wired to an enclosure in the Engine Room fitted with a pair of interlocked circuit breakers allowing selection of one connection and isolation of the opposite. The common connection of the circuit breakers shall in turn supply an isolation transformer, which shall supply the ship service switchboard.

The switchboard control system shall be capable of momentary closed bus transfer between ship's power and shore power in either direction. The transition shall be accomplished with switchboard-mounted controls. The controls shall also disallow transfer to shore power if the load current on the ship service bus exceeds 200A. The shore power current shall be indicated by a meter on the ship service switchboard.

Shore power inlets on the Main Deck shall be Meltric DS200 with 60 degree angle base accessory and other accessory components as necessary. Inlets shall feature latching flip lids. Each inlet shall be

mounted onto a NEMA 4X enclosure near the end on the Main Deck. Each shore power circuit shall be fitted with a circuit breaker mounted into the enclosure with watertight handle operable through the enclosure. Additionally, each enclosure shall be fitted with a shore power phase sequence indicator and power available light, with indicator lights on the enclosure exterior and control transformers and fuses as necessary.

## 324 SWITCHGEAR AND PANELS

### 324.1 GENERAL SWITCHBOARD REQUIREMENTS

The switchboards shall be of steel construction with framework of steel profiles and covered with front and rear steel doors and side plates as indicated by the Siemens proposal (Siemens Energy Inc., proposal SF221987605, Rev 01, Jan 17, 2023) or Siemens specifications. The switchboards will be enclosed and self-supporting for deck foundation mounting. The switchboards will be equipped with standardized electrical and mechanical components as described in this section and will be correctly dimensioned both thermally and mechanically.

The switchboards and their supporting components shall be designed and outfitted to allow operation of vital vessel functions and systems with one individually replaceable component out of service. Service may be at reduced output or capacity.

The BDPC switchboard, 480V ship service, and 208/120V ship service switchboard shall be installed in the EOS. The 480V emergency switchboard and 208/120V emergency switchboard shall be installed in the E-Gen Room. Each switchboard shall be dead front type with drip shield, pilot lights, meters, controls, synchronizing controls, and other components as necessary. Primary functions shall be operable from the switchboard fronts without opening the doors. Drip shields shall be equipped with LED lights so that all controls and circuit breakers are illuminated. The switchboards shall be equipped with non-conductive hand rails and insulating mats shall be outfitted on the deck in front of them.

All buses shall be copper, with silver plated connections. Bolts, washers, and nuts used for bus and stud connections shall be corrosion resistant.

All bus connections shall be provided with mechanical locking to prevent loosening. Solderless compression lugs shall be used for all cable connections, or an approved compression type tunnel lug on circuit breakers and other equipment installed in the switchboard. Cable supports shall be provided within the switchboards to secure cables and prevent load from being imposed upon the cable terminations.

The main bus shall be braced to suit maximum available short circuit current. Bus supports shall be of high quality moisture, vibration, and shock resistant insulation material, phenolic or equal.

### 324.2 BDPC SWITCHBOARD

The BDPC switchboard shall be equipped with components as described in section 314. Each major component of the BDPC switchboard will have a touch screen input/output panel or similar to permit local input and control independently of the PMS system and is further detailed in the Siemens specifications for this vessel. The switchboard shall be able to be operated locally for all functions and displays as per the requirements of ABS and USCG.

Each primary power component shall be equipped with a manual emergency stop button which shall deenergize that component while maintaining the function of the remaining components.

### 324.3 EMERGENCY GENERATOR SWITCHBOARD

The emergency generator switchboard shall be dead front type with necessary power meters for each source, bus bars, indicator lights, control switches, circuit breakers, etc. The voltage regulation shall be automatic, 480 VAC, 60 Hz, 3 phase. An automatic bus transfer switch shall also be provided and connected to supply the emergency switchboard. The emergency switchboard, automatic bus transfer switch, emergency transformers, and all supporting components shall be installed within the E-Gen Room.

When the emergency generator is in Auto mode, the control system shall be capable of automatically starting up the emergency generator when the line voltage drops by 15% to 40% of nominal for 3 seconds. When the emergency generator voltage builds to 85% to 95% of nominal, the system shall transfer the emergency switchboard supply from the main power source to the emergency power source. The control system shall automatically return the emergency bus load to the ship service power source when the ship service line voltage rises to nominal and holds for 30 seconds. Upon transfer of the emergency bus load back to the ship service source, the automation system shall execute a cool down and shutdown sequence for the emergency generator.

In addition to the above outlined sequence, the emergency generator shall start immediately when main generators unexpectedly trip off line regardless of ESS battery state of charge.

A voltmeter, ammeter, KW, KVA meter and indicator light shall be mounted on the ship service switchboard, or mimicked within the IAS, to show when the emergency generator is supplying power to the emergency power system.

Provide two "On/Off/Auto" selector switches for operation of the emergency generator, one on the emergency generator switchboard, the other on the ship service switchboard. Provide indicator lights at each switchboard to indicate the status of the emergency generator. When a discrepancy between switch positions exists, the switch logic shall be arranged to provide the following functionality:

*Table 6: Emergency Generator Switch Logic*

EMERGENCY SWITCHBOARD SWITCH POSITION	SHIP SERVICE SWITCHBOARD SWITCH POSITION	EMERGENCY GENERATOR FUNCTION
On	Off	Off
Off	On	Off
Off	Auto	Off
Auto	Off	Off
On	Auto	On
Auto	On	On

As an alternative to the switch arrangement described above, the Power Management System software and operator interfaces may be configured to provide equivalent functionality.

The emergency generator and switchboard will be arranged as per the requirements of ABS and USCG as a minimum. Details shall be similar to the ship service switchboard.

#### 324.4 SWITCHBOARD INSTRUMENTS

All instruments shall be of current manufacture with planned production for at least 5 years and shall be vibration resistant. Instrument dials shall be white with black markings. Red marks shall be placed on dial scales to indicate rated voltage and full ampere load of the generators. The rated voltage and full ampere load shall be at the 70% scale range maximum. All instrument accuracies shall be within 2.0 percent of full scale.

Switchboards with multiple possible power supplies, such as multiple transformers, ship or shore power, et cetera, shall include lights indicating which source is providing supply.

The 480V ship service switchboard shall include a phase sequence indicator to monitor the shore power feed.

#### 324.5 CIRCUIT BREAKERS

Circuit breakers shall be provided to allow protection and isolation of each circuit. To the greatest extent possible, circuit breakers shall be from one manufacturer and one product line for each size range. All circuit breakers shall be UL 489 Listed and shall have an interrupting rating adequate for the fault current available at their respective location under any system configuration.

Circuit breakers shall be coordinated with upstream and downstream circuit breakers to provide selective tripping characteristics in which faults are isolated by the furthest downstream circuit breaker. Thermal-magnetic or adjustable electronic trip circuit breakers shall be provided as necessary to ensure coordinated tripping within the system. A circuit breaker selective coordination study shall be developed by the Contractor and submitted to ABS Class and USCG for approval and to the Owner for review and comment.

Circuit breakers within the ship service 480V and 208/120V switchboards and the emergency 480V and 208/120V switchboards shall use plug in bases and shall be removable from the front of the switchboard without deenergizing the switchboard.

All circuit breakers shall be trip-free type. All circuit breakers with thermal-magnetic overload trips shall be derated or calibrated for operation in 50 degrees C ambient temperature if they are outside air conditioned spaces.

#### 324.6 SWITCHBOARD WIRING

Instrument and control wiring shall be stranded type SIS and shall have flame-retardant insulation. Wiring shall be secured and protected within the switchboards using wire troughs, wire ties, wire loom, or other appropriate methods. Wiring for doors and hinged panels shall be routed with loops to avoid wire strain and shall be protected by wire loom or equivalent. Where wire must be installed through the steel structure or sheet metal partitions, bushings shall be inserted to avoid chafing of the wire insulation. Where control, instrument or alarm wiring leaves the switchboard, terminal blocks shall be provided for connection of the vessel's cables. All terminal blocks shall be provided with approved identification. Wire ends shall be fitted with terminal sleeve markers. All power cables shall be secured

adequately to prevent motion caused by vibration and to withstand the maximum calculated short circuit current.

### 324.7 PANELBOARDS

Panelboards shall be provided in accordance with the ABS Reviewed Drawings for distribution to local circuits. All panelboards shall be provided by the same manufacturer and shall be compatible with the selected circuit breakers and other vessel components and integration considerations.

Panelboard shall be fitted with molded case circuit breakers for the protection and isolation of circuits served. The circuit breakers shall be assembled onto interior units which shall in turn be mounted in fabricated steel enclosures with dead front covers and drip shields. The panelboard assemblies shall be flush mounted in sheathed or lined spaces; and surface mounted elsewhere. The panel board enclosure shall be coated to provide a corrosion-resistant finish suitable for a tropical marine environment.

In general, panelboards shall have cables entering from the bottom.

Busses shall be connected to maintain phase sequencing consistent across the vessel.

Panelboards shall be sized to supply the connected loads as the detailed design is finalized by the Contractor. The panelboards shall be populated with circuit breakers and shall include one spare circuit breaker for every ten used circuit breakers or fraction thereof. Additionally, each panelboard shall be sized to include one blank unused circuit breaker location for each ten used circuit breaker locations or fraction thereof.

Each panelboard shall be provided with a circuit directory card on the inside of the panel board door. The card shall be computer generated and printed, not handwritten. The directory cards shall be updated to the as-built condition prior to delivery of the vessel to the Owner. A panel directory booklet shall be developed and provided to TxDOT. The electronic file or files used to produce the directory cards shall be delivered in an editable format to the Owner within 30 days of vessel delivery to the Owner.

### 324.8 NAMEPLATES

Nameplates shall be provided for all meters, dials, buttons, indicator lights, and other devices on the switchboards to clearly identify their function, indications, circuit, or applicable purpose. Control or selector switches shall have labels with their positions described. Nameplates shall be engraved phenolic material on the exterior or faces of switchboards, with black lettering on a white field or white lettering on a red field for items of particular importance to safety.

Nameplates for circuit breakers shall identify each circuit by name and number and give the breaker trip rating and frame size. Blank name plates shall be mounted for each spare circuit. Nameplates shall be secured by a minimum of two screws, not glued or taped.

Internal to the switchboards, all terminal strips, fuse holders, switches, relays, power supplies, PLCs, contactors, and other components shall be labeled with printed adhesive labels. Labels shall identify the component by name, or by designator corresponding to the design drawings. Busses shall be marked to show phase identifications with letters 12mm high.

### 324.9 DRAWINGS

Switchboard and panelboard design drawings, parts lists, and other documentation shall be submitted by the Contractor to the USCG and ABS as necessary for approval prior to fabrication. This documentation shall be submitted to the Owner for review and comment as well.

The documentation shall include, at a minimum, physical arrangement and structural construction, internal component arrangements, point to point wiring diagram, material list, and nameplate list for each switchboard and panelboard. Drawings shall include front, rear, end, and section views and shall indicate clearance or equipment withdrawal dimensions.

See section 810.1 for requirements regarding design and engineering studies and calculations.

All documentation of testing, including factory testing, is to be delivered to TxDOT. A testing binder is to be created by the Contractor so copies of all testing at any phase (factory to delivery) are captured. All testing documentation shall be scanned or otherwise digitized and delivered to TxDOT in electronic format within 30 days of vessel delivery to the Owner.

### 325 POWER MANAGEMENT SYSTEM

A Power Management System (PMS), designed to comply with the Class and Regulatory requirements, shall be incorporated into or integrated with the overall Integrated Automation System (IAS). The PMS shall be PLC based using commercially available PLC system components. Each half of each switchboard shall be able to operate independently with its own PMS system or portion thereof, which will coordinate with one another upon closing its bus tie connector.

The PMS shall function to match electrical supply to demand load by starting and stopping generator sets, charging, or discharging ESS batteries, or limiting power to the propulsion thrusters. The top priority of the PMS shall be to maintain system stability and continuity of power supply, including under single component fault conditions. Additionally, the system shall function to optimize ESS battery life span, minimize fuel consumption, and balance generator run time.

The PMS shall automatically start and connect an additional generator as load approaches available capacity, and shall disconnect, cool down, and shut down a generator as capacity exceeds load; time delays shall be incorporated into the control algorithm. The PMS shall monitor system load and produce an overload warning at 95% of on-line capacity and overload alarm above 100% of on-line capacity with adjustable time delay. Under overload condition, the PMS shall limit load on the propulsion thrusters by reducing the propulsion thruster inverter frequency. The PMS shall furthermore limit the BDPC DC bus current for extended periods to the design maximum current.

In addition to automated control, the PMS shall allow manual activation and securing of generator sets, battery ESS systems, and other power components. The PMS shall operate accounting for these activations or shutdowns. The PMS shall also account for any active emergency stop signals.

The PMS or IAS shall monitor the BDPC system and its supporting components for unexpected or fault conditions and shall respond automatically and/or by signaling a warning or alarm condition to the vessel crew.

## 326 BATTERY MANAGEMENT SYSTEM

Siemens shall provide the complete battery management system with its respective subcomponents as follows. Refer to the proposed Siemens scope of supply and services for further details.

### 326.1 ENERGY STORAGE MODULE CONTROLLER

The Battery Module Controller (BMC) includes two temperature measurements per battery cell and individual voltage measurements for all cells. These measurements are delivered to the BMC once per second. These measurements are sent to the battery pack controller.

### 326.2 BATTERY STORAGE PACK CONTROLLER

The battery pack controller will communicate to each battery module through a closed secured wireless network. Breaker control is operated by this controller. All operating limits are implemented, and parameters are monitored at this controller. Any excursion from the operating values will cause the battery pack controller to trip its load breaker. Multiple battery pack controllers are connected in a Profinet ring configuration to the battery system control.

### 326.3 ENERGY STORAGE SYSTEM CONTROLLER

The battery system controller is connected to the power management system to manage the ESS state of charge. The battery system controller collects data from all parallel battery packs within the system. This system receives and performs commands such as pre-charging, connection, disconnection, etc. Alarms and warnings generated are transmitted to the charger and to the alarm system.

## 330 LIGHTING AND RECEPTACLES

### 330.1 LIGHTING GENERAL

The vessel shall be provided with lighting throughout the interior and exterior. The vessel shall also be provided with flood lights, search lights, exit lights, task lights, and other emergency fixtures as required for a vessel of this type and service. See section 420.0 for navigation light requirements.

Lighting plans, equipment specifications, and installation locations shall generally follow Reference (BB), but fixture quantity and location shall be adjusted as necessary to provide light intensity levels identified in section 330.2. Fixture and receptacle placement in Reference (BB) is approximate and does not account for all possible interferences with or shadows created by other vessel components. Final fixture placement shall be determined in consultation with TxDOT's representative to avoid interferences and shadows, and to provide adequate illumination levels. The Contractor shall develop a final lighting arrangement plan which shall be updated in conjunction with the overall design development of the vessel. Updates shall be implemented throughout the project duration at intervals of not more than 180 days. Submit the plans to TxDOT for review and comment, and to USCG and ABS as necessary for approval.

The normal lighting system shall derive power from the ship service distribution system, and the emergency lighting system shall obtain power from the emergency power distribution system.

Light fixtures operating at 120V AC or greater shall be UL 1598A Listed. Fixtures operating at 12V or 24V shall be robustly constructed commercial marine grade and suitable for the intended service. Any fixture substitutions from Reference (BB) shall be approved by TxDOT. Light fixtures shall feature IP ratings appropriate for their installation location as required by USCG and ABS requirements.

The Crew Head space shall have separate local switches for the overhead light and for the ventilation fan.

All exterior light fixtures shall be controlled by three way switches on the Pilot House consoles. Lights shall be grouped on switched circuits by vessel end and function, i.e. "A End" flood lights, "A End" rescue boat and liferaft launching flood lights, main lighting, emergency lighting, et cetera. The three way switching functionality shall be provided at each Pilot House console to facilitate switching any exterior light from either Pilot House. The Contractor is advised to pay particular attention to voltage drop within these circuits and to adjust conductor sizes appropriately.

Fixtures, switches, junction boxes and other devices mounted on sheathed bulkheads or overheads or in joiner bulkheads shall be flush mounted. Any junction boxes or battery backup units above suspended ceilings shall be accessible via hinged panels in the ceiling system; the panels shall be labeled with the component accessed.

### 330.2 ILLUMINATION LEVELS

The following shall be observed as minimum maintained illumination levels; based upon a 0.6 maintenance factor in the vehicle and machinery spaces and a 0.7 maintenance factor elsewhere. Illumination shall have a 5 to 1 maximum variation in open spaces:

1. 25-30 foot candles for Salon, Pilot House, Crew Lounge, EOS, Engine Room, E-Gen Room, etc.
2. 15-20 foot candles for Stairs, toilets, ER access, Compartments below the Main Deck, CLG. Gear Locker, Electrical Equipment Space, Main Deck lockers.
3. 10 foot candles for Main Deck below Salon Deck, Observation Deck, Salon Deck exterior, Bridge Deck exterior along normal walkway.

### 330.3 EMERGENCY LIGHTING

Fixtures supplied by the emergency bus shall be provided as required by the regulatory bodies and generally as shown in Reference (CC), including:

1. Fixtures in public spaces, toilets, stairways and deck areas so as to enable crew and passengers to readily find their way to evacuation areas and the open decks;
2. Fixtures on Main Deck so as to allow passengers to exit vehicles and find their way to evacuation areas;
3. Fixtures in the vicinity of life saving equipment to aid in the embarkation of passengers;
4. A minimum number of fixtures (about 30%) in the Engine Room, below deck compartments, the E-Gen Room, and Pilot Houses;
5. battle lanterns;
6. exit signage;
7. navigation lights;
8. search lights;

All emergency battery backup ballasts shall have adequate capacity to provide lighting for a period of at least 30 minutes upon loss of main power.

Each of the emergency lighting fixtures shall be identified with an engraved laminated phenolic label having a 1" white letter "E" on a red background. The label plate shall be affixed on or adjacent to the emergency fixture in a location viewable from below.

### 330.4 FLOOD LIGHTING

Provide floodlights in accordance with ABS and USCG rules and regulations and as indicated in Reference (BB). Flood lights located on the rescue boat davits shall illuminate the rescue boats and shall be switched locally. Flood lights on the vent trunks adjacent to the rescue boat davits shall illuminate the rescue boat cradle area and the area over the side of the vessel where the rescue boat will rest when launched; these lights will be switched from the Pilot House.

Flood lights at the Bridge Deck level on the Pilot House catwalks shall be aimed to illuminate the ends of the Main Deck, particularly the area dedicated to emergency passenger assembly. The flood lights on centerline shall be mounted below the catwalk to avoid obstructing the sight line from the helm seat to the end of the vessel.

Flood lights on the Bridge Deck in the midship area shall be aimed to illuminate the deck area to allow passage along the deck and examination of the machinery on deck.

### 330.6 PILOT HOUSE LIGHTING

The Pilot House chart counters outboard of the consoles on the right-hand side (starboard side for the "A End" Pilot House, port side for the "B End" Pilot House) are to be provided with dimmable gooseneck LED light fixtures, with integrated red lenses (2 fixtures in total).

Provide dimmable lamps on all instrument lighting which would interfere with the night vision of Pilot House personnel. All instrument back lighting shall be LED. Arrange indicator lights on the Pilot House consoles and aft Pilot House bulkheads so they create minimum reflection on Pilot House windows during night operations.

Each Pilot House shall be equipped with overhead lighting switched as indicated in Reference (CC). Additionally, the stairwell to Each Pilot House shall be equipped with a red jelly jar style fixture. This fixture shall be mounted below the deck level to minimize glare at the helm position.

### 330.7 SEARCHLIGHTS

Contractor shall supply and install two (2) searchlights on each Pilot House top; one will be a Glamox SL2IR LED searchlight with infrared camera accessory while the other will be a dual halogen Glamox Model CL25-11. The following accessories shall be included with each searchlight:

1. Ebox EB3GS 100-240 VAC IP 22 power supply box
2. Pair of power and signal cables, length as required
3. Operator control panels OP3GS/9-28 VDC
4. Control cables Ethernet CAT 5 FTP, length as required
5. Displays for infrared camera systems shall be supplied in each pilothouse

The infrared camera on the SL2IR search light shall be interfaced to the suite of navigation software to allow display of the camera image on the Pilot House navigation screens.

The search lights shall be mounted on pedestal foundations on the Pilot House roof which shall include braces or brackets to prevent excessive vibration or deflections. The foundations, bulwarks, and handrails shall be arranged so that each search light can illuminate the water around the perimeter of the vessel from directly ahead to midship.

### 330.8 EXIT LIGHTS

Provide exit lights in accordance with ABS and USCG rules and regulations and as indicated on Reference (CC).

The exit light fixtures shall be ceiling or bulkhead mounted and shall operate at 120V with 90 minute battery backup. Three exit lights shall be installed on the Salon Deck; one fixture shall be located at each end directly in front of the stairs to Main Deck and one shall be located at the aft port door of the Crew Space, as shown in Reference (BB).

Provide battle lantern style lights with internal rechargeable batteries, Jay Moulding part number SYM 101.3L or equal. They shall use LED light sources and 5 Ah batteries.

### 330.9 SHORE POWER

See section 321 for shore power inlet hardware requirements.

### 330.11 RECEPTACLES

Provide and install receptacles generally in accordance with Reference (CC). The Contractor shall develop an independent receptacle arrangement plan which shall be evolved in conjunction with the overall design development of the vessel. Updates to the receptacle plan shall be implemented throughout the project duration at intervals of not more than 180 days. Submit the plans to TxDOT for review and comment, and to USCG and ABS as necessary for approval. Receptacles shall be located so that any point on the vessel can be reached with a 50 foot extension cord. Any point within the normal working areas of the Engine Room, EOS, #1 Comp, and #8 Comp shall be reachable with a 25 foot extension cord; the extreme outboard compartment areas need not be reachable.

All 120 volt receptacles shall feature a grounding conductor connection which shall be connected to a grounding conductor within the supplying circuit. The grounding conductor shall in turn be grounded to the vessel structure.

Unless noted otherwise, receptacles for general use shall be mounted approximately 18 inches above the finished deck level. Receptacles at counters, tables, and work benches shall generally be installed at those levels. Receptacles dedicated to specific equipment items shall be mounted to suit connection to those items.

Receptacles inside the EOS, Salon, Crew Space, and Pilot Houses shall have two USB outlets per receptacle to provide power to USB devices.

Receptacles in the Crew Head, adjacent to the sink in the Crew Room, on open decks, and in machinery spaces shall be equipped with GFCI protection, either through a receptacle unit or by the supplying circuit breaker. If conflict exists between USB receptacle and GFCI receptacle features, omit the USB receptacle for those locations affected.

Provide receptacles for navigation lights in accordance with section 420.0. Navigation light receptacles shall not be GFCI protected.

## GROUP 400 - COMMAND AND CONTROL / ELECTRONICS

The Contractor shall provide and install a suite of command, control, communication, monitoring, navigation, and surveillance systems as described herein. Each system shall be complete and fully functional, approved by USCG and ABS as necessary, tested, programmed, configured, and documented.

### 420 NAVIGATION SYSTEM

Each Pilot House shall be fitted with two (2) deck mounted control consoles and two overhead mounted consoles; see section 641.2 for construction details and physical mockup requirement.

The consoles shall be provided with the equipment specified in Reference (B) and elsewhere within this specification or equivalent as approved by TxDOT. The Contractor shall develop detailed arrangements for the equipment items, utilizing mounting brackets, angled console sections, or similar to optimize ergonomics. Screens in console tops shall be arranged per ASTM F1166-07 to allow proper viewing and control by the operator in both seated and standing positions. Screens shall not be installed flat in console tops; particular attention shall be given to viewing angles and glare.

The overhead console shall be as designed in Reference (B) with fabrication details as described in section 641.2. The outboard port and starboard sides of the overhead consoles shall be cabinet sections for storage and access to the mounted overhead equipment.

Control and instrument cabling shall be trunked into the deck mounted consoles from below using a minimum of two MCTs. As much as feasible one MCT shall be for power cables and one for control and signal cables, at least 50% of the available capacity shall remain unused in each MCT. Cable securing and support requirements within the consoles shall match those elsewhere in the vessel. One spare circuit shall be routed to each deck mounted console and terminated in a convenience receptacle.

#### 420.0 NAVIGATION LIGHTS

Provide and install navigation lights and control panels meeting COLREGS and all applicable USCG and ABS requirements. The lighting system shall be suitable for a double-ended ferry, configured generally as shown on Reference (EE). Design exception will be required for the location of side lights relative to the vessel maximum beam for consistency with the existing fleet. Justification has previously been made with consideration of vessel arrangements and precedence from the existing fleet. The Contractor shall be responsible for obtaining this alternative compliance from USCG.

Navigation lights shall be commercial marine grade Aqua Signal series 75 LED or equal, appropriate for vessels greater than 50 meters in length. Each required light shall have duplicate light sources powered by isolated circuits.

All navigation lights shall be powered via marine brass waterproof receptacle and plug sets, matched to create an IP66 rated installation. The duplex receptacles, Pauluhn 2634B-125-C1 or equal, shall be hard wired to the navigation control panel via permanently mounted shipboard cable. The plugs, Pauluhn 420BP-125 or equal, shall be connected to each navigation light fixture with portable cord of appropriate length, as specified in Section 303.6. located at each navigation light location. Side lights, masthead lights, and stern lights will be equipped with two plug and cord sets to support the duplicate light sources. Receptacles shall be located at the mast bases and near other navigation lights to

reasonably minimize the lengths of portable cord. The receptacles and plugs shall be clearly labeled to ensure proper wiring is maintained when replacing fixtures.

The navigation lights shall be controlled by navigation light control panels, suitable for flush installation into the Pilothouse consoles, in each Pilothouse as shown in Reference (B). Navigation light control panels shall be provided by J Box Inc., or equal. The panels shall provide visual/audible alarm in the event of a navigation light failure and shall comply with the requirements of 46 CFR Part 111.75-17. The navigation light panels shall be interlocked with a selector pushbutton switch to select/transfer the navigation light control between the "A End" and "B End" control panels.

Navigation light panels shall be approved by TxDOT and match TxDOT's existing fleet of vessels, powered by J-Box with the following part numbers for the panels: NLFM5D4SUG120ADPMPTF/A-NUC-PFA for the "A End" Pilot House and NLFM5D2SUG120ADPMPTF/A-NUC-PFA for the "B End" Pilot House. Panels shall feature dual power feeds, alarm upon light failure, control of dual light source fixtures, dimmable indicator lights, and alarm test function.

#### 420.1 AIR HORNS

See section 551.1 for air horns and air horn controls.

#### 420.2 CLOCKS

Three (3) six inch, 12/24-hour, battery operated quartz marine clocks, polished brass finish, Weems & Plath brand or equal, shall be provided. One shall be installed in each Pilot House and the EOS. Pilot House clocks shall be mounted on window mullions on the port side for the "A End", starboard side for the "B End" as directed by TxDOT. The EOS clock shall be mounted per TxDOT direction.

#### 420.3 BAROMETER

One (1) six-inch diameter marine barometer with polished brass finish, Chelsea Model No. 20825 or equal, shall be provided and installed in each Pilot House. Each barometer shall be mounted below the inclinometer on centerline on the bulkhead above the stairs to the Pilot House.

#### 420.4 INCLINOMETER

Two "bubble in tube" type inclinometers shall be provided and installed, Moeller Instrument Company No. 455 or equal. Each inclinometer shall feature two tubes, one indicating between +/- 5 degrees, and the other indicating +/- 15 degrees. The inclinometers shall be mounted on centerline on the bulkhead above the stairs to each Pilot House.

#### 420.5 FOG BELL

Two (2) 12-inch diameter cast bronze fog bells shall be provided with the vessel's name engraved on the surface. The bells shall be mounted, with brackets, on the exterior of each of the Pilot Houses in a TxDOT approved location. The bells shall have a polished finish with a preservative coating, NYALIC Marine Ultra-Clear or equal. The clapper shall be provided with a lanyard.

## 420.6 PROPULSION CONTROLS

The propulsion controls shall be supplied and specified by Voith and each control station will consist of two (2) joysticks with push button control panels and two (2) fifteen (15) inch monitors. Three stations shall be provided, one for each Pilot House and one for the EOS.

One Voith supplied 15-inch HDMI digital display shall be mounted in the Pilot House console on the pilot's left side to display all Voith system related information, statuses, and alarms. The other display shall be mounted on the opposite side's console toward midship. The displays and backlights on buttons in the Pilot Houses shall be dimmable.

The EOS station shall be considered the primary station, with the Pilot House stations being remote. The system shall facilitate control transfer between stations; the system shall be configured to minimize the effort required to transfer control between Pilot House stations.

Additional control units, enclosures, power supplies, interconnecting cabling, and other components shall be provided and installed per Voith standard scope of supply and as necessary to create a complete, functional, and regulatorily approved system.

The system shall allow full operator control of the propulsion functions, including starting and stopping, and control of thrust magnitude and direction. The system shall interface with the vessel Power Management System to only allow operation when available power is adequate, to prevent overloading the power system, and to limit power available to the thruster units if available power becomes reduced. The control system shall also monitor thruster unit parameters such as fluid pressures and component temperatures and shall interface to the Alarm and Monitoring System to communicate and record system status.

Independent propulsion VFD emergency shutdown switches shall be provided at the starboard console on the "A End" and the port console on the "B End". These controls shall bypass the Voith provided propulsion control Power Management System and shall connect directly to the propulsion inverter units.

See sections 810.4 for vendor provided system design drawing requirements and section 856 for manual, instruction, and software requirements.

## 423 ELECTRONIC NAVIGATION AIDS AND EXTERIOR COMMUNICATIONS

The Contractor shall provide and install a suite of navigation and communication electronics to facilitate operation of the vessel. This shall include two (2) complete sets. one (1) for each pilothouse. The components shall generally be mounted within the deck mounted and overhead Pilot House consoles, with operator interfaces in the control faces, and processor units and power supplies within the console cabinetry. Antennas shall generally be mounted to the Pilot House roofs. The suites shall be provided in duplicate, one set in each Pilot House; subsections below describe installations for one Pilot House, they shall be replicated across both Pilot Houses. Final arrangement of navigation equipment and Pilot House display consoles shall be subject to TxDOT approval in accordance with section 420.

All antennae shall be installed to avoid interference with each other and provide maximum clear reception.

The Contractor shall engage a marine electronics vendor familiar with Furuno products who shall review the products identified herein and suggest revisions if necessary to ensure compatibility and functionality of the final installation. The vendor shall submit a proposed final parts list to the Contractor who shall in turn submit to TxDOT. The installation, configuration, programming, and testing of equipment shall be supervised by the vendor or equipment manufacturer's representative. Documentation of equipment settings, parameters, and programming shall be delivered to TxDOT.

The electronic systems shall be in accordance with the applicable regulations of the Federal Communications Commission, 47 CFR Part 80, USCG, and ABS regulations. The Contractor shall be responsible for accomplishing FCC inspection and obtaining certification and licenses. The system shall be considered complete only when the FCC inspection and certification has been accomplished and licenses issued. FCC inspection and certification paperwork shall be posted on "B End" Pilothouse bulletin board.

Where specific model or part numbers are identified within this specification, they shall be interpreted as indicating the most recently released version of that product family or functionality. Where a newer version of an item is available, that newer version shall be provided.

Descriptions herein identify the primary components of the system in order to define overall scope and functionality. Additional components such as cables, adapters, power supplies, connectors, mounting hardware, software, and licenses shall be provided as part of the Contractor's scope of supply.

In addition to the dedicated Voith propulsion, Furuno radar and navigation, and Siemens automation screens, each of the four deck-mounted Pilot House consoles shall be fitted with two monitors configurable to view vessel operational information, including radar/chart display, CCTV images, and the infrared camera image from the search lights. Details shall be agreed upon with the TxDOT representative and shall generally follow the installation aboard the ESPERANZA "HOPE" ANDRADE.

#### 423.1 RADAR/GPS SYSTEM

The vessel shall be equipped with an integrated radar/AIS/GPS/compass/chart plotter system consisting of the following at each end:

- Two (2) chart plotter radars, Furuno model FMD3200 with EC3000 processor units, MU 190 19" LCD color monitors, and RCU024/5 Keyboard/Trackball Control Units.
- Two (2) 8-foot open array antenna, model XN24CF/8 with RSB128-106N gearboxes.
- One (1) satellite compass, Furuno model SC130 with SC1303 antenna and SC701 junction box. The antenna is required on the "A End" only.
- Two (2) GPS receivers (Furuno WAAS/GPS Receiver GP-170 display with BBWGPS antenna.
- One (1) class A AIS system, including class A AIS transponder, model FA-1701; 4.3-inch color display, model FA-1702; GPS/VHF combined antenna, model GPA017 S/S.
- One (1) data recorder, Furuno Simplified Voyage Data Recorder, model VR7000S with VR7010 data collection unit, VR7017 display unit, and VR7022F junction box.
- One (1) weather sensor, Furuno AirMar 220WX.
- Anemometers are to be shown on each radar.

The navigation chart plotter installation shall include all required C-Map NT chart software and licenses for operation on the Texas Gulf Coast.

The Contractor shall supply and install all interconnecting cabling, interface units, junction boxes, antennas, antenna mounts, radar gear boxes, and support brackets for a complete, functional system.

The displays and controls shall be mounted in the Pilothouse in accordance with Reference (B). Location and installation of radar antennae and GPS exterior components on the Pilot House roof shall be as detailed in Reference (Q).

The Contractor shall supply and install a supporting NMEA 2000 network with up to 10 equipment drops per Pilot House, NMEA data conversion and expansion capability, power supplies, and cabling as necessary. A NMEA 2000 backbone bus shall connect the Pilot Houses and shall additionally run to the EOS where it will be terminated in a junction box for future connection.

### 423.2 DEPTH SOUNDER

The vessel shall be equipped with two (2) depth sounders (Furuno RD33) and four (4) transducers (Furuno DT-800MSF). One (1) display unit shall be mounted in each Pilot House per TxDOT direction. The transducers shall be installed in compartments 2 and 7, two (2) in each compartment. Each pair of transducers shall be installed with a switch to select the active transducer. The installation shall include all required interfacing hardware and cabling. Location and installation shall follow the Transducer Arrangement Reference (DD).

### 423.3 VHF AND UHF RADIO SYSTEMS

The vessel shall use VHF and UHF radios as principal means of external communication. The installation shall consist of four (4) mounted VHF radio sets, two (2) mounted in the 'left' overhead console in each Pilot House, and two (2) mounted UHF radio sets, one (1) mounted in the 'right' overhead console in each Pilot House.

The VHF radios shall be ICOM model IC-M506 each with a 4-foot VHF marine band 4.5dB gain antenna, Digital Antenna brand, model 826-VW, mounted on top of each Pilot House. The UHF radios shall be Motorola model XPR 5550e with 8-foot antennae on top of the Pilot Houses.

The Contractor shall supply and install all interconnecting cabling and support brackets for a complete functional system. Location and installation shall follow Reference (B).

## 430 INTERIOR COMMUNICATIONS AND ALARM SYSTEMS

Interior communications and alarm systems shall be provided and installed as described in the various subsections of section 430.

### 430.0 SOUND POWERED PHONE SYSTEM

The Contractor shall provide and install a Hose McCann common talk, selective ring, sound powered phone system as required to meet regulatory requirements. There shall be a total of ten (10) telephone stations on the vessel installed in the following locations:

<u>Total Qty.</u>	<u>Location</u>
2	1 phone in each Pilothouse

1	1 phone in Emergency Generator Room
1	1 phone in Crew Space
2	1 phone at each end of Main Deck, adjacent to vehicle barrier gate controls
2	1 phone in each Voith Propulsion Room, #1 Comp and #8 Comp
1	1 phone in Engineer's Observation Station
1	1 phone with acoustic enclosure in Engine Room

Phone stations shall be drip-proof. The phone installation in the Emergency Generator Room shall be equipped with a rotating blue beacon and alarm bell. Each phone station on the Main Deck at the vehicle barrier gate controls shall have an external alarm bell. External alarm bells and lights shall be supplied by the emergency bus.

The phone stations in the #1 Comp, #8 Comp, Engine Room, and EOS shall be connected to the alarm annunciation system described in section 430.6 to distribute incoming call annunciations throughout the Hold Deck spaces.

The phones located in the E-Gen Room and Engine Room acoustic booth shall be outfitted with a jack and portable headset that will allow hands-free communication. The portable headset shall include sound attenuation features so that the operator may be heard over ambient sound. The portable headset cord shall be of sufficient length to allow the operator to reach all sides of the emergency generator or the diesel generator sets and main fire pump.

A disconnect switch shall be installed in each Pilot House to electrically isolate the Main Deck phone located adjacent to the vehicle barrier gate controls. Each of the two switches shall disconnect the exterior phone on its respective end while maintaining the functionality of the remaining system components.

In addition to the system described above, an independent sound powered phone system between each Pilot House and the EOS control console shall be provided. The system shall consist of a jack box on the right-hand side of each deck mounted Pilot House control console (starboard side for the "A End" Pilot House, port side for the "B End" Pilot House, and a headset with adequate cord to allow the pilot to sit in the helm chair. The Pilot House jack boxes shall be connected to a jack box in the EOS with accompanying headset at the local Voith Schneider propeller control joysticks to allow a crew member in the EOS to speak to the pilot while controlling the Voith Schneider propellers.

Cabling for all sound powered phone systems shall be Tricab BH product line, or equal. Cable shall be shielded and compliant with IEEE 1580, IEC 60331-11, and IEC 60331-21.

The systems shall be tested and verified by the manufacturer's technical representative. Nameplates and markings shall be provided in accordance with USCG regulations and other sections of this specification.

Upon systems completion and commissioning, the Contractor shall provide system drawings including wiring diagrams and final cable routes and component locations laid over a vessel arrangement. The drawings shall include bills of materials with all devices and cabling including part numbers.

### 430.1 GENERAL ALARM SYSTEM

A general alarm system shall be installed in accordance with USCG regulations and ABS requirements. The system shall use equipment as supplies by Hose-McCann for fleet commonality.

The general alarm system shall be provided with an appropriate feeder distribution panel and branch circuit distribution panels as necessary. Each panel shall have at least one branch circuit for each deck level so as to provide uninterrupted operation in the event of damage to a portion of the vessel or system. Each general alarm contact maker shall initiate and transmit an audible alarm through all areas of the vessel via general alarm bells placed per Reference (FF), subject to final approval of TxDOT. In the Engine Room and Emergency Generator Room, the audible alarm shall be supplemented by rotating beacons with a flashing red light to comply with 46 CFR 113.25-10.

The public address system shall complement the general alarm system as required by regulations. Both manual and prerecorded messages over the PA system shall override and silence the general alarm.

The system shall be tested and balanced by the Technical Representative. Cabling shall be installed in accordance with IEEE 45 2002 for signal circuits. Nameplates and markings shall be provided in accordance with USCG regulations.

See the 800s sections for documentation requirements.

### 430.2 GAI-TRONICS SYSTEM/PUBLIC ADDRESS SYSTEM

A public address system shall be installed in accordance with USCG regulations. The system shall be used for transmission of orders, information, and the Service Announcement from the Pilot Houses by means of processors, amplifiers, and loudspeakers. In addition, this system will be used for internal communications between the crew as an alternative to the sound powered phone system.

The system configuration shall allow personnel to broadcast either separately or collectively to the Engine Room and Crew Spaces, or the passenger areas. The Pilot House panels shall be near the general alarm contact maker that initiates an alarm throughout all areas of the vessel so that the public address system compliments the general alarm system as required by regulations.

The system shall be designed to broadcast pre-recorded announcements, customized by TxDOT. Both manual and prerecorded messages over the PA system shall override and silence the general alarm.

GAI-Tronics processing and amplification equipment, located in the Electrical Equipment Space, shall be utilized to distribute and amplify announcements to the speakers throughout the vessel. All components should be easily removed and replaceable in the event of equipment failure.

The system shall be provided with a GAI-Tronics audio messaging system which shall play prerecorded safety messages throughout passenger areas. Announcement buttons located near the barrier gate controls will ring both pilothouse ready bells followed by a two-minute warning message on debarkation; this will be followed by a two-minute pause and then another two-minute message notifying all on board of debarkation.

Command intercom/talkback stations shall be installed in the following locations, at minimum:

<u>Total Qty.</u>	<u>Location</u>
2	1 in each Pilothouse
1	1 in Emergency Generator Room
1	1 in Crew Space
2	1 at each end of Main Deck, adjacent to sound powered phone
2	1 in each Voith Propulsion Room, #1 Comp and #8 Comp
2	1 in each Energy Storage Space
1	1 in Engineer's Observation Station
1	1 in Engine Room acoustic enclosure, adjacent to sound powered phone

Loudspeakers shall be installed throughout the vessel per Reference (HH), subject to final approval of TxDOT. There shall be a sufficient number of loudspeakers located throughout the vessel to meet minimum requirements for sound pressure levels as specified by 46 CFR. Loudspeakers located on weather decks shall be watertight and with terminations sealed for protection against the effects of wind and water.

The system shall be tested and balanced by the Technical Representative. Nameplates and markings shall be provided in accordance with USCG regulations.

See the 800s sections for documentation requirements.

### 430.3 SECURITY/CCTV SYSTEM

A closed-circuit television (CCTV) system for monitoring specific areas of the vessel shall be provided by Dowley Security Systems, Houston, TX, or equal. The system shall include four (4) monitoring stations, cameras, and infrared illuminators. Two monitoring stations shall be located in the EOS, and one station shall be located in each Pilot House. Monitoring stations shall be as specified in References (B) and (E); computers shall be provided with sufficient processing and graphics capability to view live streaming video images from the camera system. Cameras and infrared illuminators shall generally be located per Reference (HH), with final layout subject to approval from TxDOT.

The system installation shall include all cabling, foundations, power supplies, mounting hardware, and software for a complete, functional system. Cabling will consist of IE CAT 6E shielded network cable capable of power over Ethernet, or vendor recommended and TxDOT approved equivalent.

All camera inputs shall be recorded at all times and stored on a DVR system. The DVR shall be sized to store the video data and images from all cameras on the vessel for up to 30 days utilizing full native resolution at 15 fps frame rate. The data shall be managed by industry standard video compression and motion detection features. Camera views are to be user selectable for each of the two monitors in the EOS and in each Pilot House. The system shall include the capability to preserve segments of recorded footage by preventing its overwriting. The system shall also have the capability to connect to external storage or computer systems to copy recorded footage from the vessel system to external systems.

The IR system for enhanced night viewing shall be incorporated per vendor specifications.

The DVR, UPS, connecting switches, and other centralized supporting hardware shall be installed into a server cabinet and mounted in the Electrical Equipment Space on the Salon Deck. The infrared illuminator power supplies shall be mounted within their respective Pilot Houses.

A UPS shall be integrated to the DVR, through the USB interface, to provide an orderly shutdown of the DVR after loss of power and before the UPS batteries are depleted. The UPS management card shall be connected to the Ethernet switch for remote monitoring and management. If possible, the UPS and/or DVR shall interface to the IAS to provide alarm output in the event of CCTV system fault.

#### 430.5 INTEGRATED AUTOMATION SYSTEM

A Siemens IAS400 Integrated Automation System (IAS) shall be provided. The system shall provide overall automation, power management, alarm and monitoring, control, crew interface, data logging, remote connectivity and diagnostic capabilities, and other miscellaneous functions for the vessel's mechanical systems as defined by Siemens' standard scope of supply.

The central control, processing, and data storage point of the system shall be the process control unit located in the EOS. The process control unit shall be connected to cabinets distributed throughout the vessel which shall connect to the vessel's mechanical systems and components to provide data interfaces. The distributed cabinets shall be located in the EOS, each end of the Engine Room, #1 Comp, #8 Comp, and Emergency Generator Room. Additionally, operator interface terminals shall be provided in the EOS, Engine Room, #1 Comp, #8 Comp, E-Gen Room, and each Pilot House. The EOS and each Pilot House shall each have two interface screens and controls.

The system shall be provided with all necessary supporting cabling, wiring, connectors, enclosures, power supplies, cable penetration fittings, PLC components, wire management materials, fasteners, and all other components necessary for the complete installation and commissioning of the IAS. The Contractor shall provide all necessary materials and labor necessary for the complete installation and commissioning that is not otherwise provided by Siemens. IAS plans and specifications are to be provided to TxDOT for review prior to being finalized for procurement and installation.

The Contractor shall coordinate with Siemens and the Owner during the detailed design phase to produce a list of monitored and alarmed points for the IAS, as well as HMI graphics and other details. The operator interface shall replicate to the greatest extent possible that of the TxDOT ferry ESPERANZA "HOPE" ANDRADE.

Alarm system logic shall be such that the alarms are self-monitoring, fail safe. All required software and hardware shall be provided to the Owner for future system modifications (additions/deletions of monitoring/alarm points and/or modifications to set points and time delays).

The alarm system shall have a time delay and programming capabilities to prevent nuisance alarms from occurring when transient alarm conditions exist. Alarms shall not occur during normal startup or shutdown of equipment, or during normal maneuvering operations such as rapid throttle and direction changes from the operator. The Contractor shall demonstrate this capability during trials.

The system shall have a self-diagnostic feature that is activated upon power-up to identify any system errors or deficiencies. The normal display screen and alternate display screens shall be developed in consultation with the Owner. When an alarm condition is detected, the alarm(s) on display shall be activated. The display screen shall show a flashing message indicating the alarm is active. If the alarm is acknowledged, the alarm shall be silenced. Once an alarm has been acknowledged, the display will return to normal display. Acknowledged alarms will remain active until the alarm condition clears. Acknowledged alarms shall be viewable in sequence on an alarm page screen. Acknowledging one alarm shall not prevent operation or display of subsequent alarms.

The system shall be based upon commercially available off the shelf hardware and software components. Passwords for system access and review shall be provided to the Owner.

The PSI shall develop and provide to TxDOT a complete set of system documentation including detailed point to point wiring diagram, bill of materials, cut sheets, and manuals for all system components. Documentation shall include an operation manual specific to the vessel system and list of input and output points. Additionally, the Contractor shall develop and obtain USCG approval for Design Verification Testing Procedures, Periodic Safety Test Procedures, and Failure Modes and Effects Analysis as required. A copy of operational software shall be provided to the Owner on portable USB drive.

TxDOT to approve final layout of IAS system.

See section 446 for remote connectivity requirements.

#### 430.6 ALARM ANNUNCIATION SYSTEM

The IAS shall interface with a machinery alarm annunciation system to notify the crew of machinery alarm conditions. The system shall also interface with and annunciate alarms from the general alarm, fire detection, high pressure water mist, and NOVEC fire suppression systems, as well as phone calls on the GAI-Tronics internal phone system and sound powered phone system. The system shall be as provided by Inelteh or equal and is anticipated to be a component of the Siemens scope of supply. It shall feature a central control enclosure in the EOS and four alarm annunciation enclosures. One enclosure shall be mounted on each end of the Engine Room, one in the #1 Comp, and one in the #8 Comp. Each enclosure shall be fitted with a column of backlit pictographic alarm signal lights, three rotating colored indicator beacons, a bullhorn speaker, power available light, and a test button. Additionally, the EOS console shall be fitted with an indicator light panel which annunciates the same conditions as the alarm columns and features a test button.

#### 430.7 ESS OFFGAS DETECTION SYSTEM

The Contractor shall install a classified zone rated gas detection system to monitor the dedicated ESS offgas ducting. The system shall be reviewed and approved by Siemens prior to purchase. The system shall be a Li-Ion Tamer system supplied by Nexceris Inc., or equal. The system shall be specifically designed to detect electrolyte products resulting from a ruptured ESS system cell and shall have sensitivity within the parts per million concentration range. The system shall be designed and intended for early detection of battery off-gassing and thermal runaway from lithium-ion batteries, and shall include sensors in the offgas ducting, and in high and low locations in the ESS Space.

Additionally, a carbon monoxide detector and supporting equipment shall be provided and installed to monitor the offgas ducting. The sensor shall be a Monicon T100-CO 4-20mA with a detection range of 0-1000 parts per million. Install the sensor in the offgas ducting upstream of the fresh air supply tee-in and the exhaust fan. The carbon monoxide detection system shall provide output to the Integrated Automation System.

Once gas is detected by either the Li-Ion Tamer system or the carbon monoxide detector, the systems shall give feedback to the ESS controller and disconnect the ESS battery packs within the affected ESS Space. The system shall also interface with the Integrated Automation System to produce machinery alarms. Gas detection system alarms shall meet the requirements of 46 CFR 62.25-20(d)(5) to remain

separate and independent from the main machinery alarm system. Summary or trouble alarms that do not replace but only supplement gas detection alarms are allowed.

#### 430.8 LIST OF SYSTEM ALARMS

The Contractor shall develop a complete list of alarm points which will be monitored by the machinery alarm and monitoring system portion of the IAS. The system shall monitor all parameters required by U.S. Coast Guard 46 CFR and ABS Rules, parameters recommended by equipment or system vendors, and parameters relevant to the internal operation of the Siemens provided equipment and systems. The alarm list shall generally copy that of the TxDOT ferry ESPERANZA "HOPE" ANDRADE with adjustments made as necessary. The Contractor shall submit the list of alarms to TxDOT for review and acceptance. The alarm list shall broadly include, but not be limited to, the following categories and items:

- Diesel engine alarms, including exhaust temperature
- Generator alarms (The electric machine ends of the generator sets)
- eVSP mechanical, electrical, and control alarms
- eVSP control cabinet high temperature
- Hydraulic system alarms
- Energy storage system alarms
- Tank level indication and alarms
- Fluid system pressure alarms
- Bilge levels
- Watertight door positions
- Escape hatch positions
- Deck locker door positions
- Anchor winch anti two-block alarm
- Summary alarms from vendor provided systems (GAI-Tronics, CCTV, HVAC chillers, fire detection, lithium-ion battery off gas detection, etc.)
- Salon Deck fire door position indication

Temperature alarms should be reported in degrees Fahrenheit, and pressures should be reported in pounds per square inch.

#### 446 ACCESS AND WIRELESS SYSTEMS

The IAS shall include capability to connect over cellular or secure WiFi network to Siemens provided remote diagnostics and troubleshooting services. This capability shall be typically disabled, and activated upon tactile action by the crew, such as operating a key switch. The hardware and software capability shall be included as part of the Siemens scope of supply. Details of this function shall be coordinated with TxDOT prior to equipment purchase.

## GROUP 500 - AUXILIARY MACHINERY

This section describes requirements for the vessel's auxiliary systems including HVAC, seawater, non-potable water, drainage, and sanitary systems. General pump and piping requirements for all systems are addressed in Sections 503, 505, and 508.

### 503 PUMPS

The Contractor shall provide pumps that meet the performance requirements and construction features as described herein and elsewhere in these Technical Specifications and ABS Reviewed Drawings. Pumps shall be of a high commercial marine standard, built in accordance with the standards of the Hydraulic Institute and ASTM F-998 as applicable.

Pumps shall be provided with ensured suctions through submergence, foot valves, or priming systems in order that pump operation is immediate and positive. The Contractor shall verify that the installed pumps have sufficient NPSH for the selected service and system.

The performance requirements listed on the ABS Reviewed Drawings and in Table 5 are based on preliminary equipment selection, pipe size and estimated system routing shown. The Contractor shall supply pumps meeting the required flow and head requirements of the installed piping systems.

Where two or more pumps of the same size and type are specified, they shall be duplicates.

Where two (2) metal parts not of cast iron are in sliding contact, they shall be of dissimilar metals. For cast iron parts of pumps in corrosive services, which require disassembly when servicing pumps, through-bolts or studs shall be used instead of cap bolts. In general, the use of through-bolts and studs is required for securing pump parts where thread corrosion or seizure may be expected in service. Fasteners shall be stainless steel with threads coated with a compatible anti-seize compound.

For horizontal units, except close-coupled pumps, the pump and its driver shall be mounted on a common base of rugged construction. Dowels or fitted bolts shall be installed where necessary to ensure proper alignment.

Close-coupled pumps shall be heavy-duty and shall be suitable for horizontal or vertical mounting. Horizontal pumps that are not close coupled shall be driven through flexible couplings by Lovejoy, Woods, or equivalent as approved by TxDOT.

Each pump shall have a pressure gauge connected on the discharge side and a compound pressure gauge on the suction side. Provision shall be made for using a portable tachometer to determine the speed of motor driven pumps.

Pump connections 2 inches and over shall be flanged in accordance with American National Standards. Where pump nozzles are of a different size than the connected piping, a tapered transition piece of adequate length shall be used.

A vent tube with a valve shall be located at the top of the casing of all centrifugal pumps and a drain at the bottom. Alternatively, only where it is not possible to provide a vent line directly from the top of the pump casing, the vent line may be located at the discharge from the pump. Vent valves shall be 1/4 inch

to 1/2-inch stainless steel or bronze ball valves. Vent tubing shall be stainless steel or copper suitable for the intended service.

Mechanical seals shall be provided for all pumps. All pumps shall be equipped with suitable thrust bearings to absorb any primary residual thrust that may occur during operation or when the pump loses suction. In general, pumps shall be equipped with sealed ball bearings contained in housings and removable as a unit with the pump shaft.

During detail design, centrifugal pumps shall be selected to operate at, or near, the maximum efficiency point on the head-capacity curve. The pumps shall have non-overloading power characteristics, and the driver rated horsepower shall at least equal the maximum power requirement of the pump at rated speed without allowance for a service factor.

Wearing rings and casing bushings shall be provided of different hardness than adjacent wearing parts. Impellers shall have removable wearing rings wherever practicable.

The following pumps have been selected for the service identified. Not all pumps required are listed herein. Some pumps such as the barrier gate hydraulic pumps are described in their appropriate sections of the Specification. Miscellaneous hand pumps are described elsewhere.

*Table 7: Pump Table*

SYSTEM	TYPE	QTY	MANUF/ MODEL	CAPACITY	DRIVE
Fuel Oil Pumps	Positive Displacement, Gear	2	Roper 2AM08	15.8 GPM 150 PSI	TEFC MOTOR 3HP @ 1750 RPM
Lube Oil Pump	Positive Displacement, Gear	1	Viking GG475M	10 GPM 100 PSI	TEFC MOTOR 3HP @ 1800 RPM
Waste Oil Pump	Positive Displacement, Double Diaphragm	1	Wilden P230	23.5 GPM 80 PSI	Compressed Air
Fire Pumps	Centrifugal, Horizontal	2	Goulds 3196ST	200 GPM @ 270 FT	TEFC MOTOR 25 HP @ 3560 RPM
Sewage Discharge Pump	Centrifugal, Horizontal	1	Deming 7165	250 GPM @ 55FT	TEFC MOTOR 7.5 HP @ 1750 RPM
Bilge Pumps	Centrifugal, Horizontal	2	Goulds 3796MT	280 GPM @ 50FT	TEFC MOTOR 7.5 HP @ 1750 RPM
Oily Bilge Pump	Positive Displacement, Double Diaphragm	1	Wilden T8	60 GPM @ 68.3FT	Compressed Air
Non-Potable Water Pump	Centrifugal, Vertical	2	Goulds 10SV4NB30	63 GPM, 60 PSI	TEFC MOTOR 5HP @ 3450 RPM

The Contractor shall provide these pumps or an approved equal provided they meet the performance requirements of the installed piping systems and comply with the requirements described by the Specification. All pump details shall be submitted to the Owner’s Representative for approval prior to purchase.

## 505 PIPING

Piping system requirements shall be as described in the various sections of the Specification describing the systems and as shown on the piping system diagrams. Piping diagrams shall be used as guidance.

Piping systems shall be designed and installed in accordance with the requirements of the ABS Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways, and the U.S. Coast Guard.

Pipe, valves, and fitting materials shall conform to the material schedules on the diagrams. Refer to Section 042 for Buy America Compliance requirements. The Contractor shall verify the pipe sizes and pump characteristics given on the diagrams.

Piping shall be led as directly as practicable with a minimum number of bends and fittings and with sufficient joints to provide for removal, inspection, servicing, and replacement of piping, valves, fittings, and equipment. Piping shall be routed to avoid cutting the ship's structure where possible.

Pipe bends shall be used to the maximum extent possible in lieu of elbows, and where employed, the Contractor shall lay out piping systems for machine bending of pipe, with a minimum radius greater than or equal to the minimum required by ASME B31.1 & USCG regulations. The Contractor shall perform calculations as needed and obtain regulatory approval of all proposed pipe bend radii that is less than five times nominal pipe OD prior to fabrication.

The Contractor shall exercise care to develop the system arrangements and installation of piping aboard the vessel to permit the following:

- A. Free passage along walkways and ladders
- B. Free access to perform maintenance
- C. Free access to all doors, hatches, and openings
- D. Ready removal of the vessel's equipment and system components

Where piping penetrates a watertight bulkhead, deck, or tank top a USCG and ABS approved penetration fitting shall be used to ensure tightness of the structure. Penetration details shall be developed as shown on Reference (P). In no case shall the plating form part of a joint or piping. The Contractor shall ensure that any penetrations through tonnage frames do not violate tonnage rules for openings. Generally, penetrations through tonnage frames shall be made tight around the pipe or duct or shall be spaced such that the distance between the edges of two openings is equal, or greater, to the largest dimension of the larger of the two openings.

To prevent damage to piping and joints at bulkheads and decks, expansion bends shall be provided, as necessary, to allow for sufficient piping movement due to the working of the ship's structure. Expansion joints shall not be used except in engine exhaust.

As applicable, where joints of ferrous and nonferrous materials cannot be avoided, the connection shall be made with a flanged takedown joint fully isolated with gasket and sleeved fasteners using isolating washers under the fastener.

Pipe welding shall comply with the rules and regulations of the U.S. Coast Guard, American Bureau of Shipping, and the details of ASTM Volume 01.07 "Shipbuilding" Standard F722-82.

Piping systems containing oils shall be installed so that flanged connectors are located remotely from exposed surfaces having a temperature greater than 450°F. Protective shielding shall be provided around the flanged connections to prevent the possibility of spray onto exposed hot surfaces. Piping shall be located at least 18 inches away from surfaces that have temperatures under the insulation greater than 450°F.

Pipe fittings shall not be located directly over or within two feet of electrical switchboards, panels, disconnects, switches, or receptacles. Pipes shall not be routed directly over engines except for systems connected to the engine. Pipes shall not obstruct manholes, hatches, or other accesses.

### 505.1 SYSTEM DESIGN

Piping sizes indicated on the ABS Reviewed Drawings are given for reference purposes. The final selection of pipe sizes for fabrication and installation is the responsibility of the Contractor and shall meet all ABS and USCG requirements. Fluid velocity criteria given in Table 8 shall be used in piping system sizing.

*Table 8: Fluid Velocity Criteria*

SERVICE	NOMINAL Velocity - ft/s	MAXIMUM Velocity - ft/s
Fuel Oil Suction	$2D^{1/2}$	7
Fuel Oil Discharge	$5D^{1/2}$	12
Lube Oil Suction	$D^{1/2}$	4
Lube Oil Discharge	$2D^{1/2}$	6
Sea Water Suction	$3D^{1/2}$	7
Sea Water Discharge	$5D^{1/2}$	12

where D = pipe internal diameter, inches.

As applicable, unions are not acceptable in piping located behind linings, false ceilings, or in other inaccessible locations.

Except as noted elsewhere in the Specification or Drawings, each bilge branch and fuel oil tank suction connection shall have a suction bell mouth with the inlet diameter not less than 1-1/2 times the pipe diameter. The bottom of the inlet shall be 1/2 the pipe diameter from the bottom of the tank, but not over 1-1/2 inches.

Cleanout plugs shall be provided in all drain lines.

Piping systems that require drainage during start-up or relatively frequent manual drainage in service shall be provided with valved drains. Screwed plugs shall be installed where drainage is required on an infrequent basis, such as for periodic inspection, maintenance, or dry docking.

Flanged or bossed drainage fittings shall be installed where an unavoidable low point or pocket exists in a pipe run. Vent fittings shall be provided for removal of air in piping installed with unavoidable high points.

Isolation capability is desired so that individual components may be secured while the vessel is in service. To satisfy operational requirements and facilitate on-board maintenance, isolation valves shall be incorporated for individual and sectional subdivisions.

Piping systems and components shall be insulated in accordance with Section 508.

### 505.2 PIPING

Piping system requirements shall be as described in the various sections of the Specification describing the systems and as shown on the piping system schematics.

Piping shall be led as directly as practicable with a minimum number of bends and fittings and with sufficient joints to provide for removal, inspection, servicing, and replacement of piping, valves, fittings, and equipment. Piping shall be routed to avoid cutting the ship's structure where possible. Pipe bends shall be used to the maximum extent practicable in lieu of elbows.

Piping not serving the ESS space shall not be routed through the space.

The Contractor shall lay out piping systems, regardless of size or material, for machine bending of pipe to a radius of five times the normal diameter of the pipe wherever practicable, but with a minimum radius of three times the nominal diameter, if necessary.

Where piping penetrates a watertight bulkhead, a deck or a tank top, an ABS and USCG approved penetration fitting shall be used to ensure the tightness of the structure. Penetration details shall be as shown on Reference (P). In no case shall the plating form part of a joint or piping.

Expansion bends shall be provided where necessary to provide sufficient piping flexibility to allow working of the ship's structure and thermal expansion without damage to piping systems or structure. Expansion joints shall not be used except in engine exhaust.

Where ferrous pipe and fittings are required to be galvanized, they shall be hot dip galvanized after fabrication. Where galvanizing is damaged during installation, a cold galvanized coating for repairs shall be applied.

Joints between dissimilar metals shall be minimized. Where joints between dissimilar metals occur, the connection shall be made with a flanged takedown joint fully isolated with gasket and bolt isolation kits.

Pipe welding shall comply with the rules and regulations of the U.S. Coast Guard, American Bureau of Shipping, and the details of ASTM F722.

### 505.3 VALVES, FITTINGS, AND INSTRUMENT PIPING

Valves shall be accessible from the grating level unless otherwise specifically approved by the Owner. If specifically approved by the Owner, valves located beneath the deck plates shall be provided with reach rods, remote operators, or some other suitable means of access.

Hand wheels for overboard valve and keel cooler isolation shall be easily accessible.

Manually operated valves shall be readily operable by one person, directly or through operators with mechanical advantage. Valves or valve hand wheels shall be located so that the operator's hand may easily pass between the hand wheel and any interference, with the handle wheel open, closed, or in between.

Manually operated valves shall be installed with the valve stem rotated above the horizontal plane.

Butterfly valves shall be avoided and only installed with advance, written approval from the owner.

Ball valves shall be installed so that the valve handle points in the direction of normal media flow when the valve is open.

Valves shall be right-hand closing and shall have either a rising stem, or an indicator to show whether the valve is open or closed.

Unless otherwise noted in the Specification or Drawings, valves that are 2-1/2 inches and larger, shall be flanged with bolted bonnets and packing glands. Valves that are 2 inches and smaller may have union ends and bonnets.

Ball valves shall be bolted body construction. Seats and seals shall be RPTFE.

Check valves shall be installed wherever flow reversal in a system would be detrimental to operational requirements.

Stop check valves shall be installed wherever flow reversals could flood a space.

Swing check valves shall be installed in a horizontal plane and in a fore and aft orientation where possible.

Relief valves shall be provided on the discharge side of all positive displacement pumps and air compressors, which do not have built-in relief valves.

Gate or ball valves shall be used where shut-off only is required. Globe or angle valves shall be used where throttling is required.

Spindles, seats, and disks of valves shall be corrosion resistant material.

If needed, installation of automatic flow control valves with takedown fittings is preferred over orifice plates for balancing flows in most cases. If orifice plates are required, the following design and installation guidelines are to be observed:

- Orifice size shall be determined by calculations developed from the actual piping system as installed, and then flow shall be verified during trials using a calibrated pressure gauge installed on each side of the orifice.
- Each orifice shall be installed between flanges that are positioned in straight sections of pipe no closer than four times the diameter of the pipe from elbows, tees, reducers, valves, and other flow disruptive components.
- A pressure tap with valve shall be installed on each flange or adjacent each flange holding the orifice to allow pressure drop measurement.

- Final orifice plates shall be 316L stainless steel, not less than 1/8 in thick, and shall have the orifice size stamped on a tab extending from the edge of the flange.
- Pressure balance shall be to the Owner's satisfaction.

All thermometers shall be installed in dry wells. Connections for thermometers with dry wells, and pressure gauges with snubbers, shall be provided to check proper operation of piping and equipment.

Pressure gauges shall be provided at all pumps, with a compound gauge at the suction side and a standard gauge at the discharge. The gauges shall be 2 1/2-inch diameter, liquid filled. Pressure gauges shall be provided with shut-off valves and snubbers and shall be mounted on gauge panels or directly at each pump. Ball type root valves shall be located at the sensing source. Gauge piping assemblies shall meet the requirements of ASTM F721-81, except that gauge tubing shall be 316 stainless steel.

Flexible connections shall be provided between piping assemblies and resiliently mounted equipment.

Flexible reach rods shall be provided for all valves under the Engine Room floor plates, or in other inaccessible locations complete with a means to indicate position or be provided with hand access hatches in the deck plates if within reach of deck plate level. Rigid reach rods shall not be used.

Valves, except for small valves whose functions are obvious, shall be provided with labels. See Section 602.

Valve locking devices shall meet the requirements of ASTM Volume 01.07 "Shipbuilding" Standard F993-86, Type II.

To the greatest extent practicable, valves are not to be located underneath the ESS, the EOS, or any electrical equipment, including batteries.

#### 505.4 HOSES AND FLEX CONNECTIONS

Flexible connections shall be provided to isolate equipment from vibration and where required to accommodate movement or thermal growth.

Exhaust systems shall use multi-ply stainless steel bellows as described in Section 259.

Flexible connections at the compressor in compressed air systems shall be stainless steel flexible hose with stainless steel wire braid jackets and 37-degree flare swivel connections on both ends.

In general, all other systems shall use ABS and USCG compliant flexible hose assemblies with 37-degree flare swivel end connections on both ends in sizes smaller than 2" and Garlock style 206 flanged flexible connections or equivalent, in sizes 2" and larger. Hose assemblies shall meet the requirements of 46 CFR 56.60-25 and shall not be more than 30 inches in length.

Cut hose with hose clamps are not acceptable except with express approval of the Owner.

Hoses shall be installed with bends or offsets to allow movement of connected equipment without "tethering" the equipment and imparting load on the hoses.

Flexible hose runs shall not substitute for pipe or tube.

### 505.5 TAKEDOWN JOINTS

Unless otherwise noted in the Specification or Drawings, flanged takedown joints shall be provided in piping 2-1/2 inches and over. Ground joint unions may be used in piping two inches and smaller. Takedown joints shall be provided to allow removal of all inline equipment, or to allow removal of equipment normally blocked by the pipe. Takedown joints with isolation shall be installed wherever dissimilar metals are used as described elsewhere in this section.

Flanges in piping shall conform to ANSI standards for the appropriate service.

Where a steel flange is used with either a cast iron or bronze flange, the steel flange shall have a flat face, and a full-face gasket shall be used.

Takedown joints in tubing shall be SAE 45 degrees flare type, with long nuts.

### 505.6 PERMANENT JOINTS

Generally, in steel pipe 2 1/2 inches and over joints shall be butt weld, and in sizes 2 inches and under joints shall be socket weld unless threaded fittings are specified.

Fuel and lubricating oil piping shall be kept away from engine exhaust pipes. The Contractor shall avoid routing pipes near electrical equipment as much as possible, and in no case shall flanges, unions, or other takedown joints be located over electrical equipment.

Piping in each system shall be arranged drain naturally. In addition, compressed air piping shall be arranged to drain back to the air receivers, or fitted with dirt legs and drain valves where this is not possible.

Pockets in pipe lines shall be avoided. Each system shall be provided with fittings, valves, or traps to enable complete drainage of pipes. Where pockets do occur, bosses and valves or screwed plugs shall be provided for draining.

### 505.7 PIPE HANGERS

Piping shall be adequately supported by hangers suitable for the material and service.

Pipe hangers shall meet the requirements of ASTM F708. The Contractor shall adjust the design, spacing, and installation of pipe hangers to provide an installation suitable for carrying the weight of the pipe and its contents, accounting for dynamic loading imposed by the operating conditions of the vessel, and to prevent damage from vibration and thermal expansion.

Care shall be exercised to place pipe hangers so that strain is avoided where piping is connected to machinery.

Hangers shall be attached to pipes with bolted clamps or other removable hangers suitable for the application. Positive means of preventing bolts from working loose, such as lock washers or thread locking compound shall be used on all hanger bolts. Except for exhaust piping, hangers shall not be welded directly to pipes.

Where dissimilar materials occur or where hangers support non-ferrous pipe, hangers shall be lined with an approved isolation material.

For hot engine piping such as exhaust and jacket water, flexible hangers shall be provided to accommodate thermal growth along with flexible pipe connections to the engine. See Section 259.

All pipe hangers shall be approved through the submittal process prior to fabrication.

### 505.8 DRIP PANS

Drip pans shall be provided under all equipment that may leak oil during operation or regular maintenance and in accordance with regulatory requirements. Required locations shall include, but not be limited to, machinery, pumps, oil filters and strainers, fuel filters and strainers, air compressors, generators, etc.

Drip pans, fabricated from 3/16" steel and fitted with drains shall be installed around or under each item of machinery or equipment where oil may be spilled. Drip pans shall be fitted with drains boss and stainless steel quarter turn valves.

A coaming shall be provided for containment under the emergency generator.

### 506 VENTS, FILLS, AND SOUNDING TUBES

Vents, fills, sounding tubes, and overflows shall be provided as required by ABS and USCG rules and regulations and as indicated on Reference (II).

Curvature or slope should be avoided in sounding tubes wherever possible. Where curvature is unavoidable, a 20-foot radius shall be the minimum permitted. Reverse bends are not acceptable.

Magnetic Gems sight level gauges with quarter turn stainless steel isolation valves at upper and lower connections shall be provided for tanks in accordance with the plans and regulatory requirements. Flanges or unions shall be placed between gauge and valve to facilitate removal.

Vents terminating in recess openings in the Island Structure shall be fitted with minimum 3/16" 5086 hinged aluminum louvers with stainless steel hinges.

Vent pipes for lavatories may be combined in overhead of the deck on which the highest fixture is located and led to weather.

Tanks shall have sounding tubes arranged generally as shown in Reference (II) and shall sound the deepest part of the tank served. Each sounding tube shall be led from approximately 1 inch above the lowest point in the tank, as straight as possible, to its upper terminal. A steel striking plate shall be provided below each sounding tube.

Stainless steel deck access boxes with flush bronze, or stainless steel, covers shall be provided for sounding tubes that terminate at the Main Deck. The covers shall be engraved with the name of the tank or space in 3/8-inch letters. Four (4) corrosion resistant "T" wrenches to fit the deck box plugs shall be provided and stowed in racks within the Machinery Space access at each end as directed by TxDOT.

All deck access boxes and sounding tubes shall be of common manufacture and shall have compatible wrench sockets. Sounding tubes that terminate in the Engine Room shall have quick opening/self-closing gate valves at the tops.

Vents shall be provided for tanks and inaccessible spaces below the Car Deck as shown on Reference (II). Vents for fuel oil and lubricating oil tanks shall also serve as overflows. Void vents to the weather shall penetrate the Car Deck just inboard of the bulwarks. Vent terminals shall be located just inboard of the bulwarks with the goosenecks located 30 inches above the deck.

Vent piping below deck shall be Schedule 80 steel pipe. Vent piping above deck shall be Schedule 40 316 stainless steel complete with goosenecks. Ball checks shall be Wager 1700 or equal. Screens and flame screens shall be provided as required by regulation. Balls shall be made of Monel or other corrosion resisting material. Screens shall be stainless steel. Vents shall meet the requirements of U.S. Coast Guard 46 CFR 56.50-85

Fuel oil and lube oil containments provided as shown in Reference (II). Containments shall contain a drain with strainer at the lowest corner of the containment to allow drainage of rainwater and spilled liquids. The containment drain shall be fitted with a shut off valve and drain line leading to the oily bilge tank.

## 508 PIPE INSULATION

All insulation material and installation details shall be in accordance with ASTM F683, except as modified herein. Prior to the application of insulation or linings, the surfaces to be covered shall have been prepped and painted as specified elsewhere.

Insulation installed in accommodation, service, and control areas shall be noncombustible unless approved by USCG for use on this project as described in NVIC 9-97 Ch. 1.

Where piping insulation is not installed behind joinery or ceilings and is near accesses or walkways or vulnerable to mechanical damage, an aluminum sheet metal cover shall be provided over lagging to protect the insulation and vapor barrier from damage.

Insulation exposed to weather shall be lagged with stainless steel or aluminum sheet metal over insulation and vapor barrier and shall be sealed to prevent water ingress.

### 508.1 MEDIUM AND HIGH TEMPERATURE INSULATION

Insulation materials, thickness and method of application shall be in accordance with commercial marine standards.

All surfaces having normal operating temperatures above 125°F shall be insulated as described below with a thickness not less than that given in the accompanying tables.

Where thicknesses are three inches or greater, or the temperature is over 600°F double layers shall be used with all joints staggered. Surface temperature of insulation shall not exceed 135°F.

Engine exhaust systems shall be insulated from the connection at the engine to the penetration at the stack diaphragm. Engine exhaust pipe and components shall be insulated with removable blankets.

Removable blankets shall be manufactured from needled glass mat, JPS "Tempmat" or equal, with a stainless steel mesh interior and silicone impregnated glass cloth exterior. Insulating blankets shall be secured with stainless hooks and laces.

Exhaust insulation sections within the Engine Room shall be no greater than six feet between flanges to allow for removal for maintenance. Separate short sections of insulation pads shall be installed over flanges and flexible connections sized to overlap adjacent exhaust pipe insulating pads.

All insulating materials shall be properly secured to prevent settling and to permit ready removal for maintenance of equipment. Blankets shall be fitted to encase the fitting and laced with stainless steel wire and lacing anchors as applicable to permit easy removal for service.

The surface to be insulated shall be properly wire brushed, cleaned, and painted with two coats of heat resistant aluminum paint before application of insulation.

Piping under the engine room floor plates and in other locations where there is little or no contact with personnel is not required to be insulated.

Valves and fittings shall be suitably insulated with material and thickness equal to adjacent piping.

Insulation joints shall be tightly butted and secured to the pipe with not less than two metal bands per segment. In cases where the pipe insulation abuts flanges and fittings the ends of the insulation shall be tapered to permit free removal of bolts.

Thickness of insulation shall not be less than that listed in the following table for the service temperature of the pipe:

TEMPERATURE RANGE, °F	PIPE SIZE:	4" OR LARGER	2" TO 3 1/2"	LESS THAN 2"
126-266		1"	1"	1"
267-337		1 1/2"	1"	1"
338-387		2 1/2"	1 1/2"	1"
388-499		2"	2"	1 1/2"
500-599		3"	2"	2"

All flanges, flange fittings, valves, piping components, applicable machinery and equipment shall be covered with removable and reusable insulated fitted material, completely lagged, where required for inspection and maintenance.

### 508.2 LOW TEMPERATURE AND ANTI-SWEAT INSULATION

Low temperature insulation thicknesses for surfaces listed below are based on cellular glass material which does not preclude the use of other acceptable materials.

OPERATING TEMPERATURE, °F	PIPING/EQUIPMENT	THICKNESS OF INSULATION
Up to 35F	Standard	3"
36-100	Light duty/anti sweat	1 1/2"

Anti-Sweat Insulation shall be provided for hot and cold-water piping and equipment with surface temperatures from 56F to 125F, including soil pipes and deck drains. Such items shall be suitably insulated and lagged to prevent condensation.

Anti-Sweat Insulation shall additionally be provided for all plumbing and deck drains exposed to weather.

### 508.3 CHILLED WATER PIPE INSULATION

All chilled water piping, valves, and fittings shall be insulated with 2" of cellular glass, approved closed cell foam, or an Owner approved equivalent. Insulation shall be noncombustible or low flame spread and tested in accordance with 164.012 or Annex 1 Part 5 of the FTP code. Insulation materials, thickness and method of application shall be in accordance with USCG Regulations.

The insulation shall be covered with a low permeability vapor barrier, and all longitudinal and circumferential joints shall be sealed with matching vapor barrier tape. The butt end of pipe insulation sections, and terminations at equipment connections, fittings, and bulkhead penetrations shall be sealed with vapor barrier mastic or tape. Care shall be exercised to ensure that the insulation vapor barrier is completely sealed with no tears or openings.

Insulated chilled water piping located on the exterior of the vessel shall be protected by stainless steel cladding as described above to protect the insulation and vapor barrier from damage. The stainless steel cladding shall conform with ASTM F683 and ASTM C1767.

Hangers for chilled water piping shall not compromise the insulation system. Hangers and supports that are secured directly to cold services shall be adequately insulated with thermal breaks and vapor sealed to prevent condensation.

The Contractor shall provide proposed insulation materials and installation details for approval prior to installation.

## 513 MACHINERY SPACE VENTILATION

### 513.1 GENERAL

A mechanical fresh air ventilation system shall supply outside air to the engine room and the propulsion motor rooms in accordance with Reference (JJ). A positive pressure is recommended in the Engine Room since combustion air is taken from inside the engine room. A 10% surplus of supply air relative to exhaust flow is recommended to maintain a slight positive pressure.

All other watertight compartments shall have natural intakes and exhausts as shown in Reference (II). Air inlets and discharges shall be fitted with removable mesh stainless steel screens.

### 513.2 ENGINE ROOM VENTILATION

The Engine Room shall be ventilated with forced intake and forced exhaust by marine duty vane axial supply fans. Intake fans for the Engine Room shall be Howden or equivalent 25" Diameter Axial Fans with 12,200 CFM delivered flow. Exhaust fans for the Engine room shall be Howden or equivalent 36" axial fans with 19,600 CFM delivered flow.

The engine room fresh air supply shall be taken via the four supply fans at the four corners of the Engine Room. The plenums shall be lined with 2" fiberglass insulation to reduce noise on the main deck by approximately 10 dBa. The fans will draw air in through louvers located in the bulwark. The louvers shall face outboard and shall be ZAZZ Moisture Rejection Closures with electronic actuators. Louver sizes and arrangements shall be as shown in Reference (KK) and sized to minimize noise with velocities <1,000 fpm. Ducts and supply terminals shall distribute the air throughout the engine room, with attention to directing airflow towards the generators, and approved by CAT for correct air flow. Ducting should be kept to a minimum as shown in the plans, while preventing hot spots or short circuit airflow and ensuring proper equipment functionality.

Design exception will be required for the use of moisture rejection closures of aluminum construction. Justification has previously been made with consideration of the vessel's protected route and precedence from the existing fleet. The Contractor shall be responsible for obtaining this alternative compliance from USCG.

The starboard aft supply fan located within the EOS boundaries and corresponding ducting run through the EOS shall receive additional noise mitigation. This duct run shall be 10 gauge minimum and acoustically insulated. The supply fan shall be provided with an acoustic enclosure as shown on References (JJ) and (NNN). The acoustic enclosure shall be accessible to provide removal of the supply fan.

Engine room exhaust ventilation air shall be drawn up through the stack by the exhaust fans located on Bridge Deck. The exhaust air will be ducted up and out of the starboard side of the stack behind the cover plate as shown in the Plans. The TxDOT logo shall be painted on both cover plates (port and starboard) on the top of the stack. The cover plate on the starboard side in way of exhaust ventilation air shall be enclosed on the sides and bottom and shall extend to the top of the stack to conceal any accumulation of soot from exhaust on the stack. It shall extend 2 feet outboard of the stack to reduce noise as shown in the Plans. Drains shall be provided and routed inside and down the stack to the main deck as shown in Reference (NN) so that any rain and soot is drained and does not accumulate on the outside of the stack or the Bridge Deck.

Each exhaust fan shall be provided with an inlet bell and safety screen at the inlet.

Ductwork shall be in accordance with the Plans and shall be approved by TxDOT. The final delivered flow and static pressure rating of fans shall be determined once ducting design is finalized.

### 513.3 VOITH SCHNEIDER PROPULSION ROOM VENTILATION

Each propulsion room (Compartment #1 and Compartment #8) shall be ventilated with forced intake by marine duty vane axial supply fan and natural exhaust as indicated on the Plans. Intake fans for the eVSP compartments shall be Howden or equivalent 20" diameter axial fans with a delivered flow of 6,400 CFM. The intake plenum should be lined with 2" fiberglass insulation. The louvers shall face outboard and be ZAZZ Moisture Rejection Closures with electric actuators. Louver sizes and arrangements shall be as shown in Reference (JJ) and sized to 1250 fpm per manufacturer's guidance for moisture rejection from the air.

Ductwork shall be in accordance with the Plans and shall be approved by TxDOT. The final delivered flow and static pressure rating of fans shall be determined once ducting is finalized.

## 513.4 SHUTDOWNS

Fan control shall be interlocked with the fixed fire extinguishing system actuation switches. Machinery space ventilation fan emergency stops shall be located next to the engine room fuel oil shutdowns as indicated on Reference (Z). All emergency shutdowns shall be pull to stop and push to reset. Upon release of the NOVEC fire suppression systems, all supply fans shall shut down and all actuated louvers and fire dampers shall close.

All fans shall be capable of remote start/stop from the EOS via the IAS panels.

## 514 AIR CONDITIONING SYSTEMS

HVAC shall be provided in accordance with Reference (KK) and as described herein. Duct sizes, capacities, and other information shown are based on estimated duct routing and construction. The final design shall be based on the Contractor's own calculations considering the as-installed duct construction, routing, and equipment installed on the vessel. Calculations shall be performed in accordance with SNAME T&R 5-14, Recommended Practices for Ship Heating, Ventilation, and Air Conditioning Design Calculations. Calculations, drawings, and details shall be submitted to the Owner's Representative for approval.

The systems shall be complete with all components and controls necessary for satisfactory operation and performance. The Contractor shall be responsible for ensuring that all components are properly sized, all necessary controls provided, and that the installation is completed to the satisfaction of the Owner's Representative.

Condensate drain lines with P-traps shall be installed from all units above the main deck to the main deck. Drain lines shall be fitted with sufficient cleanout fittings and feed to the sewage tank.

### 514.1 DESIGN CONDITIONS

The heating, ventilation, and air conditioning equipment installed shall be capable of maintaining the indoor design conditions at the design outdoor air conditions noted in Table 9.

*Table 9: HVAC Design Conditions*

	WINTER		SUMMER	
	°F, DB	°F, DB	°F, WB	%RH
Outdoor air	25	95	82	58
Ambient Seawater	35	92		
Indoor air, Accom and Crew Spaces	70	75	63.9	55
ESS Spaces	72	68	60.4	65

Winter heating calculations shall assume spaces are empty of people, and no credit shall be taken for heat from adjacent spaces, lighting, or equipment.

### 514.2 CONTROLS

Programmable automatic temperature/humidity controls for all AC units with 316 stainless steel pad lockable covers shall be provided for each HVAC system on the vessel.

Remote shutdown shall be provided in accordance with USCG requirements.

Thermostats, controls, and other equipment located in passenger areas shall be arranged to preclude tampering or adjustment by unauthorized personnel.

The Contractor shall be responsible for adjusting the control system set points for efficient operation during commissioning.

### 514.3 DUCTING INSTALLATION

The ductwork shall be sized and detail designed by the Contractor. Ducts shall be sized as large as practicable to suit the units provided, to minimize noise, and proportioned so that specified headroom is maintained. Air velocities shall not exceed 1,250 ft per minute inside crew and accommodation spaces. Duct work in occupied spaces shall be concealed above ceilings.

Fabricate ductwork from galvanized steel sheet metal in accordance with the standards of the Sheet Metal and Air Conditioning Contractor's National Association (SMACNA) and ABS and USCG requirements. Break large panels to prevent panting. Ducts shall be smooth inside with no protruding edges. Fabricate ducts in sections in machinery spaces no longer than 60 inches, with bolted flange joints at each end. All ducts shall be airtight.

Ducts shall be supported at about 4-foot centers with removable hangers.

Where required by USCG for fire protection, ducts shall be a minimum of 11-gauge (3mm) steel. 11-gauge minimum steel shall be used for sleeves between fire dampers and the adjacent fire boundary.

Where practicable, fabricate bends and elbows with a throat radius of at least 1 1/2 times the width or diameter of the duct. Where a smaller throat radius is required, splitters or turning vanes shall be used. Round 90° elbows shall be made of at least five (5) parts or vaned turns, which may be used at the Contractor's choice. Accomplish reduction in duct size by long transitions with maximum included angle of 30 degrees.

Dampers and diffusing terminals shall be provided to regulate the flow of air to the various compartments. They shall be sized to deliver the required air quantities at a velocity not exceeding 750 fpm under the final balanced condition. Aluminum louver face ceiling diffusers compatible with the ceiling system shall be used on the salon deck. All louvers shall be made nonadjustable. Size and air pattern to be approved by TxDOT.

### 514.4 HVAC INSULATION AND LAGGING

HVAC ducting shall be insulated and lagged. HVAC insulation shall be noncombustible and comply with USCG requirements.

Insulation shall be 1-inch-thick fibrous glass board with minimum density of 3 pounds per cubic foot for rectangular duct. Insulation on round or flat oval ducts and bends shall be 1-inch-thick flexible fibrous glass with a minimum density of 1.5 pounds per cubic foot. Vapor barrier shall be factory-applied aluminum foil, at least 0.002 inches thick. Joints in the vapor barrier shall be overlapped a minimum of 2 inches and coated with an approved vapor sealing compound.

Where ducting is not concealed behind ceilings or joinery, it shall be protected by aluminum sheet metal covers to prevent damage to the insulation and vapor barrier.

### 512.5 FIRE DAMPERS

Provide and install fire dampers where required by regulation. Fire dampers shall be installed in accordance with applicable USCG and ABS requirements, including the provisions NVIC 9-97 Ch 1, using stainless steel fasteners. The Contractor shall minimize the use of fire dampers through use of structural or heavy gauge insulated steel ducts.

Damper sizes and locations shown in Reference (KK) are based on preliminary duct and louver sizes, and fire zones shown in Reference (DDD). The final quantity of fire dampers, their locations, and final sizes are subject to detail design of the HVAC ducting.

Where fire dampers are concealed by joinery, provide access panels for inspection and operation of the damper. All access panels in passenger accessible spaces shall be lockable or tamper resistant to the satisfaction of the Owner's Representative.

Fire dampers shall be stainless steel, with automatic electric actuators, Belimo or equal, power to open/spring closed, and 165°F fusible links. All fire dampers shall be capable of manual operation.

If a fire damper is not immediately adjacent to a removable louver, an access door shall be installed in the duct adjacent to the fire damper to allow inspection and cleaning of the fire damper blades.

Fire damper actuators shall be provided with power from the 120 VAC power distribution system and configured so that interruption of the power will initiate closing of dampers and shutdown of ventilation fans. Dampers and fan shutdowns for each system shall be independent. Fire dampers shall meet all requirements set forth in 46 CFR Subchapter H §72.05-50.

Fire dampers for the emergency generator shall remain normally closed and only open when the emergency generator starts.

### 514.6 PILOT HOUSE HVAC

Each pilothouse shall be cooled with 2 (two) 3 Ton Packaged Rooftop Units for a total of 4 (four) units on the vessel. The packaged units shall be located on the roofs of the pilothouse as shown in the plans. Ducting shall be installed in the pilothouse overhead, concealed above the drop ceiling to distribute air throughout the pilot house.

### 514.7 CREW SPACE HVAC

The Crew Space on the "A End" of the Salon deck will be cooled with a 2 Ton split heat pump unit. The indoor unit shall be installed in the crew room, and the outdoor unit installed on the bridge deck.

Heat pumps shall be suitable for marine service. Pipe condensate drains from each indoor unit to the nearest deck drain, taking care to slope the drainpipe continuously for complete drainage. Neither the indoor air-handling unit, nor the condensate drain piping shall be led over or near electrical equipment. Except for a short piece of hose between the indoor unit and the drain piping, condensate drains shall be fabricated from copper tubing with approved mechanical or brazed fittings.

### 514.8 SALON DECK PASSENGER SPACE

The Salon passenger space and "B End" Electrical room will be air conditioned with two (2) 10 Ton Carrier Rooftop Packaged Units located on the Bridge Deck and ducted throughout the Salon as shown in Reference (KK). The Salon deck HVAC shall be divided into two independent systems at the MVZ, with one AHU serving the "A End" of the vessel and the second serving the "B End".

Salon restrooms shall be provided with ACED90 Cook exhaust fans. Supply air for the restrooms shall be drawn from the passenger space through louvers in the doors.

### 514.9 ESS HVAC AND VENTILATION

The two ESS Spaces shall have independent HVAC systems controlling their environments as shown in the ESS HVAC and Ventilation Drawing, Reference (KK).

The air in each ESS space shall be maintained between 68°F and 77°F, with relative humidity not exceeding 65%. To achieve these design conditions, each ESS space will be cooled by two air handling units (AHUs), sized for the application. The AHUs shall be located inside the ESS rooms in a manner that minimizes penetrations between the ESS rooms and surrounding spaces. The two AHUs per ESS space shall be electrically fed from separate ship service switchboard buses to prevent a single electrical fault from eliminating HVAC in either ESS Space.

The systems shall be arranged for summer reheat. A marine grade flanged, finned tube duct heater, Indeeco TZFU or equal, shall be installed in the supply air duct to each ESS Space for this purpose.

Air shall be exhausted from each ESS Space at a rate of six air changes per hour, ducted to and discharged through a sealed plenum and outboard facing louver in the bulwark as shown on the plans. Dedicated UL rated Class 1 Division 1 exhaust fans, Knape BRCV10 or equal, shall be provided for this purpose. The exhaust louver shall be a ZAZZ Moisture Rejection Closure with electric actuator.

Replenishment air in equal quantity shall be drawn in through a sealed plenum and outboard facing louver in the bulwark and ducted to the return side of the ESS Space AHU as shown on the plans. A marine grade flanged, finned tube duct heater, Indeeco TZFU or equal, shall be installed in the replenishment air duct to preheat incoming air when required.

The exhaust replenishment air ducts shall be balanced to maintain a negative pressure relative to the surrounding space per ABS requirements.

Each ESS Space will also to be equipped with a battery outgassing system. See Section 301.5 for additional information.

### 514.10 CHILLED WATER SYSTEM

A chilled water system shall be provided as described in Reference (KK). The chilled water system shall provide water at 45 °F to two ESS air handling units, two ESS cooling cabinets, one in each ESS Space, two EOS air handling units, and two Blue Drive Plus C cooling skids located in the EOS.

Three (3) York model YCAL air cooled chiller units shall be installed on the Bridge Deck. The chillers shall be sized such that two of three chillers can provide chilled water to meet the maximum cooling load.

Two of three chillers shall operate continuously, with a third held in standby. The standby chiller shall be rotated in for one of the two operating units consistently to maintain equivalent runtime on all chillers.

Each chiller shall be equipped with the following options: onboard circulation pump, single point circuit breaker, 115V control transformer, service isolation valves, high and low ambient kits, discharge pressure read out kit, interface card (BacNET/N2/Modbus), TEAO fan motors, low sound fans, 1 1/2 inches thick double insulation of evaporator, copper fin coils (fin and tube), louvered enclosure panels, hot gas bypass (1 circuit), flow switch, vibration isolators.

The Contractor shall calculate the total loop volume of the as-routed chilled water system. If the as-routed system volume does not meet the manufacturer recommended minimum of at least 6 gallons/ton, the contractor shall adjust system routing & pipe sizes, or install a chilled water buffer tank in the system. If installed, the chilled water tank shall be designed and stamped in accordance with ASME Boiler and Pressure Vessel Code Section VII, have an internal baffle, and be fitted with two 3" ANSI B16.5 150# flanged system connection and a relief valve. The tank shall be insulated in accordance with Section 508, and the insulation covered with aluminum sheet metal lagging.

Chilled water will be supplied to each Siemens ESS cooling cabinet and BDPC cooling skid at the flow rate specified by the Siemens, passing through a two-circuit heat exchanger in each cooling skid. A four-way control valve shall be provided in the chilled water system near each Siemens cooling unit and configured to maintain supply temperature to the units with Siemens requirements. Within each cooling skid, an internal cooling circuit with circulation pump, controls, and 3-way valve provide cooling water to the electrical equipment, modulating flow and temperature on the internal circuit as required to cool the equipment served.

Chilled water supply to each ESS and EOS air handling unit shall be modulated to maintain temperature and humidity in the ESS Space within required limits.

Chilled water piping shall be insulated in accordance with Section 508.

## 521 FIRE MAIN SYSTEM

Provide and install a fire main system meeting ABS rules and USCG requirements, and as shown on Reference (LL).

The fire main system shall have two (2) pumps, a main fire pump in the engine room and an emergency fire pump in Compartment #4. Each pump shall draw suction from the sea chest located in the same compartment through an Eaton Model 53BTX or equal strainer with a bronze body and Monel basket installed in the in the suction line.

The fire pumps shall be electrically driven horizontal centrifugal pumps capable of delivering the required flow and head for the whole system. Each fire pump shall be controlled locally or remotely from the EOS. Provide a fire pump control panel with start/stop buttons and running lights in both Pilot House to remote start the main fire pump.

Each fire station shall be equipped with a 50-foot length of 1 1/2-inch hose of ABS and USCG approved materials and a USCG approved nozzle, Protek style 372-BC 95 GPM nozzle, with 1 1/2-inch inlet. Each fire station is to be provided with a stainless steel enclosure. The stations on the main deck and salon deck are to be recessed into the deck side. The station heights shall be in accordance with ASTM F1166-

07 and the handle for the angle hose valve mounted in the enclosure shall be between 36" and 60" above the deck. Quantity and location of hose stations shall meet 46 CFR 76.10-10(d) and be located as shown on Reference (LL).

The fire main system shall provide non-automatic sprinkler deluge fire fighting to both ESS spaces. The deluge system shall be operable from outside of the ESS spaces. It is to be configured as a last resort fire suppression system to the satisfaction of ABS rules.

One (1) shore connection shall be installed at each end of the vessel. The shore connections shall have a 2" gate valve.

## 524 RAW WATER

Fabricate and install sea chests as shown in Reference (MM). Sea chest strainer plates shall be 7/16-inch thick 316L stainless steel. Strainer plates shall be fastened with 1/2-inch diameter hex head 13 UNC stainless steel screws and 1/2-inch 13 UNC stainless steel hex nuts. The hex nuts shall be tack welded to the sea chest bolting tabs. Apply thread locker to the screws when mounting the strainer plates.

Each sea chest shall be fitted with a vent that terminates to weather as shown on the Plans. Each sea chest shall also be fitted with a compressed air blow down connection. Refer to Section 551 An isolation valve shall be provided at each sea chest penetration.

Install sacrificial anodes in each sea chest as described in Section 633.

## 526 SCUPPERS AND DECK DRAINS

Deck drains shall be Hydrasearch DDXH Series or equivalent in size and weight. They shall be provided as required by ABS and USCG rules and regulations and as indicated on the Plans.

Sufficient deck drains shall be provided and located to prevent water standing on deck under ordinary conditions of list and trim. Deck drains shall be provided in all toilets and wet spaces at the lowest point.

Drains shall be 2" size and fitted at the deck with Wagner Type 134 or equal deck fittings, or Hydrasearch (DDXH-2) or equal where P-traps are required. Deck fittings shall be provided with removable bronze strainer plates and screws. P-traps are required at lavatories, sinks, and drains leading to the sewage tank. Deck drains with integrated P-traps do not require an additional P-trap in the connected piping. Drains shall be arranged as shown on Reference (NN).

Anti-Sweat and freeze protection insulation shall be provided for all deck drains that are exposed to weather per Section 508.2.

Drainage from the Main Deck shall be by way of freeing ports cut in the bulwark as shown on Reference (L) and approved by ABS, USCG, and TxDOT.

## 528 PLUMBING DRAINS

All sanitary grey water, black water drains, and wet space deck drains shall discharge into the sewage holding tank. Design and installation shall match Reference (OO). One (1) non-clog sewage pump shall

be provided to drain the sewage tank. The discharge shall be led to the main deck service box at the "B End" as shown on the plans.

Drains for individual water closets shall not be less than 4". P-traps are required at lavatories, sinks, and drains leading to the sewage tank.

Horizontal runs of gravity drain piping shall have a downward slope of not less than 1/8" per foot longitudinally and 1/4" per foot transversely. Clean out plugs shall be located at convenient places, particularly at bends. Each drain shall be subjected to a hydrostatic test and drains shall be demonstrated to show proper removal of deck water, waste, and toilet discharges.

Anti-Sweat and freeze protection insulation shall be provided for all plumbing drains and P-traps that are exposed to weather per Section 508.2.

### 528.1 ADA HEAD

A head complying with the American disabilities act shall be located on the "A End" of the vessel on the port side and shall be installed per Reference (D). Any deviation from this drawing shall be submitted and approved by TxDOT or their representatives before installation. As shown, the ADA head shall contain the following items:

- Toilet
- Sink
- Hand dryer
- Tissue holder
- ADA compliant handrails
- Light fixtures, inside and at door outside
- Sufficient air conditioning
- emergency crew assistance button (note: placement is not shown in the reference drawing)
- wall-mounted baby changing station (note: placement is not shown in the reference drawing)
- wall-mounted sharps container (note: placement is not shown in the reference drawing)

Equipment listed above shall match exactly what is listed in section 644.2 of this specification and any substitute must be approved by TxDOT before acquisition.

The ADA head shall have a wind deflector surrounding the door and the threshold shall be ADA compliant. The wind deflector shall be integrated with the perforated fencing surrounding the rescue boat on the "A End". The HVAC unit installed atop the ADA head shall be an R/V unit at 15,000 BTU and shall be TxDOT approved before installation.

The top of the ADA had shall be coated with matching nonskid to the main deck in the vehicle lanes and shall be surrounded by rain guards except for the outboard (bulwarks) side which shall be open for draining. All non-potable water, sewage, and drain piping shall be arranged per Reference (D) and shall be integrated into the appropriate ships systems.

## 529 BILGE SYSTEMS

### 529.1 BILGE SYSTEM

Provide and install a bilge system as shown on Reference (PP) and in accordance with USCG requirements. Each watertight below deck compartment shall have a bilge suction lead to one of the bilge suction manifolds in the engine room. The "A End" (Bolivar) suctions shall go to the "Bolivar End" bilge manifold and the "B End" (Galveston) suctions shall go to the "Galveston End" bilge manifold. The engine room shall have four (4) bilge suctions, two of which shall be independent of the bilge manifold.

These manifolds will be pumped by either the oily bilge pump or one of the bilge pumps depending on the contents of the fluid being pumped. The oily bilge pump shall lead to the oily bilge tank while the bilge pumps shall lead overboard or to the service box.

In general, all piping for the bilge system shall be routed below the elevation of the pump inlet/outlet connections and routed as directly as possible with the minimum number of bends and fittings. Bilge suctions shall terminate as close to the vessel's centerline as feasible. All bilge suctions shall be located as close as possible to the lowest point of the space served. Piping shall be run inboard of 1/5th of the beam from the vessel's side.

The bilge system suctions shall consist of a stainless steel suction strainer box with 3/8" diameter perforations and surrounding the suction inlet that shall be flanged outside the box for removal. The strainer boxes shall be built in accordance with ASTM F986 and shall have an open area not less than three times the area of the bilge pipe.

Each bilge suction line penetrating a collision bulkhead shall have shut off valves capable of actuation from the Main Deck via a remote operator and flush deck access box. The deck access box shall be located outside of vehicles lanes and shall be accessible at all times.

The bilge system shall be served by two (2) bilge pumps. The bilge pumps shall be electrically driven self-priming horizontal, centrifugal pumps. The bilge pumps shall have cast iron bodies, stainless steel impellers, and mechanical seals.

The bilge system shall be provided with duplex strainers, Eaton model 50 or equal, with bronze body and monel basket on the suction side of each pump.

### 529.2 OILY BILGE SYSTEM

The Contractor shall provide an oily bilge tank as shown on Reference (PP). The oily bilge system shall be served by one (1) oily bilge pump. The oily bilge pump shall be an air driven positive displacement double diaphragm pump. The oily bilge system shall be fitted with a duplex strainer, Eaton 53BTX or equal, with bronze body and monel basket on the suction side of the pump.

## 533 NON-POTABLE WATER

A non-potable system with water tank, pressure system, fill piping with main deck fill station shall be provided as indicated on the Reference (QQ).

System pressure shall be maintained by non-potable water pressure pumps pumping against two (2) bladder tanks. The pumps shall be arranged to take suction from the non-potable water tank and to discharge to the potable water system main. One bladder tank shall be located in Compartment #3 next to the non-potable water pumps and the second in the janitorial closet on the Salon deck. Pressure switches shall be provided and configured to control pump operation and maintain system pressure.

Non-potable water supply piping shall supply water to all water services including lavatories, water closets, hose bibs, expansion tanks and the hot water heaters. Shutoff valves shall be provided at all end users.

Provide hose bibbs from the non-potable water system; two (2) in the Engine Room, one (1) in each compartment below the main deck mounted alongside the catwalk, one (1) behind each pilot house, and one (1) at each rescue boat.

Provide four (4) 5/8" nominal size by 50' length high grade garden hoses with heavy duty nozzle and four (4) ABS plastic hand recoil hose racks. Locate two (2) in the engine room and one (1) behind each pilot house as directed by TxDOT.

Hot water shall be provided by tankless electric water heaters, one in the crew room and one in the engine room.

The water heaters shall be capable of heating 10 gpm from 50 F to 150 F. Hot water supply piping shall be provided to serve the crew's head, sink in the crew space, deep sink in the cleaning gear closet, and engine room deep sink. Hot water supply piping shall be properly insulated.

Vacuum breakers or air gaps shall be installed in non-potable water supplies where required.

Signage shall be installed informing passengers and crew that the water in the system is non-potable. The signage shall duplicate those on TxDOT's existing vessels.

## 544 INDEPENDENT TANKS

Independent tanks with scantlings and structural features shall be as shown in Reference (RR) shall be provided and installed on the vessel. The arrangement and location of tanks shall generally be as shown in References (A) and (C). Table 10 lists nominal capacities of the independent tanks at 100% fill; operational capacities will vary from these values.

All tanks shall be of steel plate and fitted with swash bulkheads and stiffeners as necessary. Provide foundations of steel plate and shapes to support tanks in accordance with the Plans. All tanks except for small water expansion tanks and compressed air tanks shall be fitted with 18 inch x 23 inch bolted plate manholes in the top with access ladders inside and outside and hand grabs as required.

Tank label plates shall be provided for all liquid tanks. Label plates shall be engraved phenolic with 1 inch letters and bounded by a 6 inch color code of piping system.

Provide manholes, vent, filling, sounding, drain, and other connections as necessary.

Table 10: Independent Tank List

TANK	NOMINAL CAPACITY @100%
Fuel Oil Storage	6,300 Gallons
Fuel Oil Day	645 Gallons
Fuel Oil, Emergency Generator	90 Gallons
Lube Oil Storage	1,000 Gallons
"A End" Voith Lube Oil Storage	165 Gallons
"B End" Voith Lube Oil Storage	165 Gallons
Hydraulic Oil	170 Gallons
Oily Bilge Water	1,700 Gallons
Waste Oil	400 Gallons
Non-Potable	6,100 Gallons
Sewage Holding	6,000 Gallons
Degreaser Tank	200 Gallons
Miscellaneous	As required

Liquid level gauges shall be installed as indicated on the Plans. See Section 506.

**544.1 TANK CLEANING – GENERAL**

All tanks shall be thoroughly cleaned of debris, weld splatter, flux and other foreign matter and approved by TxDOT prior to coating and shall be kept closed thereafter until ready for coating.

All tanks shall be tested to the requirements of TxDOT and the regulatory bodies after all welding is complete and fittings have been put into place, and prior to coating the tanks. A dry survey of each tank shall be carried out and defects remedied prior to water or air testing.

All tanks of 300-gallon capacity or greater shall be fitted with one or more manholes of standard size; refer to Section 167.

**544.2 DEGREASER TANK**

A 200-gallon degreaser tank shall be fabricated and located as shown in Reference (RR). The degreaser tank shall contain a degreasing chemical of TxDOT’s choosing and shall be taken into consideration upon construction.

This tank shall be fabricated from a 24 inch diameter Sch 40 pipe, 9 feet long. All wetted surface structure and fittings shall be grade 304 stainless steel. The tank shall be sloped to the suction location (1/2 inch slope minimum). Install a sight glass on the suction end with a 2 inch drain dispensing coupling and shut off valve, accessible for bucket fill by crew. Two, 2 inch diameter fill couplings shall be installed

at the top of the tank. Install a 1-1/2 inch diameter vent line and goose neck, terminating immediately above the tank.

The degreaser tank shall be designed as shown above with the oversight and additional design parameters provided by TxDOT and their representatives. Any deviation or supplement for materials and workmanship shall be approved by TxDOT before construction.

## 551 COMPRESSED AIR SYSTEMS

A compressed air system shall be provided as indicated in Reference (SS) for diesel engine starting air, sea chests blowdowns, service air for ship's horns and service air stations, including compressors, tanks, controls, piping, and appurtenances.

"Y" strainers shall be installed ahead of all regulating and reducing valves in air piping. Relief valves and pressure gages will be installed on the low pressure side of all reducing stations.

The main air receivers shall discharge through ball valves to a common header. Air shall be delivered from the header to the diesel engine starting systems, the service air system, and the ship's whistle air system through air pressure reducing stations.

All major components of the compressed air system shall have isolation valves. All relief valve discharges shall be routed to the bilge.

### 551.1 AIR COMPRESSORS

Provide and install two (2) electric motor driven Quincy QR-25 Series Model D350HP air compressors rated at 29 ACFM at 250 psig. The base mount unit comprises of a 10hp, 230V/3-phase/60Hz marine duty motor with a compressor operating at 786rpm. One compressor motor shall be fed from the emergency switchboard and the other shall be fed from the main switchboard.

Compressor motor controllers shall be configured for automatic starting/stopping based on the pressure in the common supply header. The system shall be equipped with two (2) pressure switches to initiate compressor start and stop. The pressure switches shall be set to the pressure indicated on the Plans.

Pipe connections to the air compressors shall be flexible. See section 505.4 for details.

The compressors shall be shop tested to demonstrate the specified performance. A certified copy of the test report shall be furnished with each compressor.

### 551.2 AIR RECEIVERS

Provide and install two (2) 240-gallon horizontal air receivers for the service air system and two (2) 30-gallon horizontal air receivers for the air horns in accordance with Reference (SS). The service air shall be stored at a pressure of 250 psig and the air receiver shall be rated for a MAWP of 300 psig. The air horn air shall be stored at 150 psig and the air receiver shall be rated for a MAWP of 200 psig.

All air receivers shall be cylindrical with elliptical heads and shall comply with the applicable requirements of the ASME pressure vessel code as referenced in 46 CFR Subchapter F (Marine Engineering). The air receivers shall be ASME U or UM stamped and have ABS and USCG approval.

Receivers shall have separate process connections for inlet, outlet, drain and relief valves. The inlet and outlet connections shall be at opposite ends. The Contractor shall furnish the necessary foundations or brackets for horizontal mounting of all receivers.

Low points where moisture can accumulate shall be fitted with drain valves. Long horizontal runs of piping shall be sloped to allow drainage to low point drains or to the receivers, whichever is closest.

### 551.3 SHIPS SERVICE AIR

A branch off the main air common header shall supply service air. The pressure shall be reduced from 250 psig to 100 psig with a pressure reducing station. The service air pressure reducing station shall include a reducing valve suitable for dead end service, Norgren R18-C05-RGLA or equal, preceded by a wye strainer. Provide isolation valves and a bypass valve at the reducing station as illustrated on Reference (SS). Provide a pressure gauge on the downstream side of the reducing station.

An air header shall be run the length of the vessel with branch lines, stainless steel ball valve, and crew's foot hose connectors to serve each compartment below the main deck. The location of each compartment service drop shall be on the outboard port stanchion as shown on Reference (SS). The header shall terminate at the "B End" above the main deck with stop and check valves and coupling for shore connection and supply.

Where pressures less than 100 psi are required pressure reducer/regulators shall be provided.

Horizontal runs of piping shall be drain toward the air receivers where possible. All other low points shall be fitted with dirt legs and drain valves. Coalescing filter separators shall protect the air start valves and pressure reducing station for service air.

Before testing, the system shall be thoroughly blown out with air, and temporary screens installed ahead of any equipment not already protected. During the tests and trials all temporary screens shall be periodically cleaned.

### 551.4 STARTING AIR SYSTEM

A branch off the main air common header supplied by the ship's service air receivers shall supply starting air to the main engines. The pressure shall be reduced from 250 psig to 150 psig with a pressure reducing station. The pressure reducing station shall include a reducing valve suitable for dead end service, Norgren R18-C05-RGSA or equal, preceded by a wye strainer. Provide isolation valves and a bypass valve at the reducing station as illustrated on Reference (SS). Provide a pressure gauge on the downstream side of the reducing station.

The system shall provide starting air for the four (4) propulsion engines. Each engine shall be fitted with an air starter with a control valve, air motor lubricator, wye strainer, shutoff valve, and discharge muffler. Connections to the propulsion engines shall be flexible hoses. See Section 505.4 for flexible hose requirements.

### 551.5 SHIP'S HORN AIR SYSTEM

Air for the ship's horns shall be provided via the 250/150 psig reducing station shall provide air to two (2) 30-gallon air receivers which will in turn serve each ship's whistle as shown on Reference (SS).

The system shall supply air to the horns via the air horn receivers and combination manual/solenoid operating valves, Kahlenberg V-152L, or equal. Manual operation of the air horn valves shall be provided by lanyards routed above the helm positions. The valves shall be accessible through a door or removable panel in the joinery system.

The Contractor shall supply and install two (2) Kahlenberg D-4A air horns, one on each Pilot House roof facing its respective end of the vessel. Each horn shall be equipped with one (1) Kahlenberg M-522 signal controller which includes automated fog signals, maneuvering signals, and manual horn activation. The signal controllers shall be mounted within the Pilot House consoles and shall be interconnected so that both horns and both whistle lights operate in unison. Power for the air horn system shall be derived from the Pilot House 24V panels.

## 555 FIRE EXTINGUISHING SYSTEMS

### 555.1 NOVEC 1230 FIRE EXTINGUISHING SYSTEM

A fixed NOVEC 1230 system shall be provided as required by ABS and USCG rules and regulations and as indicated on the Plans.

This system shall follow the general design of Reference (TT) and shall provide fire suppression for each the following spaces: ESS "A End", ESS "B End", Engine Room, Engineer's Observation Station, and the Emergency Generator Room.

All components of the fire extinguishing system shall be products of the same manufacturer or listed by the manufacturer as compatible with those devices, components, and equipment. The Contractor shall utilize the manufacturer's authorized technicians for final connections and system test of the fire extinguishing systems. The Contractor shall provide TxDOT with system operating and testing manuals for the completed system.

The pull stations to activate this system shall be located at the Novec Locker at the "B End" of the vessel besides the ESS "A End" NOVEC pull station (this shall be located at the "A End" Novec Locker as well as a redundant engine room NOVEC pull station).

The Novec Bottles shall be stored in a secure arrangement as shown in Reference (TT) or to the satisfaction of TxDOT and their representatives. These bottles shall be located inside the two NOVEC lockers at each end of the ferry on the main deck. The bottles shall be new, fully charged, and fitted with level indicators. When required to protect discharge heads during handling and transportation, safety caps shall be provided.

Mount all Novec bottles on elevated foundations and securely fasten in a vertical position. Secure bottles with circumferential band/steel strap type bolted clamps around the bottle body. Use individual band clamps for each bottle to permit maintenance service and removal.

The system shall include all necessary storage cylinders, piping and control systems, alarms, warning lights, relief valves, discharge nozzles, solenoid shutdown and pressure release cylinders, and interfaces with engine, damper, and ventilation controls.

Arrange nozzles to evenly distribute and diffuse the Novec agent throughout the protected spaces. Design size and flow requirements shall be per the manufacturer's approved design manual and the USCG requirements.

Configure pressure switches to stop the ventilation supply and exhaust fans, close the fire dampers, and shut down all diesel-fired equipment in the protected space upon release of the system serving the space protected.

Each NOVEC cylinder piping header shall incorporate a threaded mechanical coupling for maintenance blowdown capability located as closely downstream as practicable in the piping design.

### 555.2 WATER MIST SYSTEMS

Provide and install a Hiller or equal water mist fire suppression system covering each ESS space.

The systems shall be both ABS and USCG approved, modular, and self-contained. Each shall be powered by an accumulator/pressure tank and shall function without electric power for system discharge. The systems shall meet applicable USCG requirements and the ASTM F3353-19 Standard Guide for Shipboard Use of Lithium-Ion Batteries.

The systems shall be installed and tested in accordance with the manufacturer's approved marine design, installation, operation, and maintenance manual, to include actuation arrangements, controls, labels, and placards configured in accordance with ABS and USCG requirements for fixed fire extinguishing systems.

Each water mist system shall be sized in accordance with ABS and USCG requirements for the ESS Space it serves. The water for the system shall be stored in dedicated accumulators. Activation of each water mist system shall be possible from each Pilot House, the EOS, and immediately outside the ESS space served. Activation of the system shall trigger all disconnects, ventilation shutdowns, and alarms required by regulation or Siemens. The fire systems in each space shall be independent. Activation of the water mist system in one ESS Space shall not shut down equipment or actuate dampers in the other ESS Space.

In addition, the water mist systems for each ESS shall be cross connected so that the accumulator system on the opposite end of the vessel can be used as a supplemental water source if required. Final design and operation of crossover subject to detail design by the system vendor.

The location of the water mist accumulator skids and system components shall be generally as shown on Reference (TT).

Each water mist cylinder piping header shall incorporate a threaded mechanical coupling for maintenance blowdown located immediately downstream of the cylinders.

### 555.3 PORTABLE FIRE FIGHTING GEAR

Portable fire extinguishers shall be provided as required by ABS and USCG rules and regulations and as indicated on Reference (BBB). Portable fire extinguishers shall be secured with heavy duty 316 stainless steel mounting brackets. All fire extinguishers located on the superstructure shall be located in recessed pockets so as to be flush with the shell plate. Final locations of fire extinguishers shall be submitted to TxDOT for approval prior to installation.

One (1) CO2 semi-portable type B-V hose reel system shall be provided in the Engine Room as indicated on Reference (BBB). The location within the space shall be to the satisfaction of the Coast Guard and TxDOT. Hose length shall be sufficient to reach all Engine Room spaces.

Fire axes shall be installed as indicated on Reference (BBB) and provided with 316 stainless steel hanger clips as required by ABS and USCG rules and regulations.

Three (3) emergency escape breathing apparatuses, Scott Air Pac or equal, with ten (10) minute air bottles and attached hoods shall be provided inside the EOS and elsewhere as indicated.

## 561 STEERING CONTROL SYSTEMS

The eVSP units steer the vessel by changing the pitch of the blades which produce thrust. The blade pitch is produced by moving the blades to a certain angle relative to the orbital at the center axis (control rod) where the thrust diagram is a circle. The control rod at the center of this circle controls the blade pitch. The amount and direction of thrust is continuously variable and achieved by an electrohydraulic servo system in the eVSP that moves the control rod. The Voith provided propulsion control system controls all aspects of VSP operation including pitch control. See Section 252 for details.

## 581 ANCHOR AND MOORING SYSTEMS

Equipment, structure, and fittings for complete and functional anchor handling and mooring systems shall be furnished and installed by the Contractor. The design and arrangement of the system shall follow References (UU) and (VV).

Provide anchor and stowage arrangement as indicated on the ABS Reviewed Drawings. The anchor shall be sandblasted (SP-1 0), coated with inorganic zinc and black build epoxy.

Provide one (1) anchor wire that is 3/4-inch diameter or larger at 420 feet length or more and windlass as indicated on the ABS Reviewed Drawings. The windlass shall be a Wintech CP10000-30(s)-DC-BB or TxDOT approved equal.

The windlass shall be electrically driven with power down and power up capabilities and local manual control. The motor controller shall be located per Reference (Z). Provide one (1) anti-two-block interlock and alarm system, Rayco-Wylie R140, or equal, along with activation switch, cable weight, and other accessories as necessary. The system may derive power from the "A End" rescue boat battery charger system, 24V panel in the #1 Comp, or AC panel in the #1 Comp. Connect the anti-two-block switch to the anchor windlass motor controller so as to stop the anchor windlass when the anchor reaches its stowed position.

Provide anchor windlass controls on the forward face of the anchor pocket structure in a TxDOT approved location. The controls shall be mounted inside a NEMA 4X enclosure so that the controls, including buttons, switches, and labels, are protected from weather when the windlass is not in use. The enclosure shall have latches or handle not requiring tools to open. The interior of the enclosure shall feature a second enclosure or panel of at least IP56 rating, into which the windlass on/off selector switch, up and down momentary pushbuttons, and emergency stop mushroom head pull button shall be mounted. Additionally, the anti-two-block system controller shall be mounted within the overall NEMA

4X enclosure. The intent is to protect the controls are protected from the sun and salt atmosphere when the windlass is not in use, and further protected from rain and salt spray when the windlass is in use.

The completed ferry must fit into and latch onto the existing Galveston and Bolivar landings on both "A End and "B End". The dogs must latch to the headlog of Landings 1, 4 and 6 and the ramp must lay down on the deck correctly in Landings 2, 3 and 5.

## 583 LIFESAVING SYSTEMS

All lifesaving equipment necessary to meet the latest requirements of the USCG and as indicated on the Plans and described below shall be provided. All ferrous fittings of boat gear and handling gear, such as blocks, fairleads, grip, shackles, etc., shall be hot dip galvanized.

### 583.1 LIFEBOAT & RESCUE BOAT

Two (2) Fassmer RRH 4.2 rescue boats shall be provided with stowage cradles as shown on the Plans. The rescue boats shall meet the requirements of 46 CFR 160.056 and be equipped in accordance with 46 CFR, Sub-Chapter W. The rescue boats and their complement shall match Reference (WW). Any deviation from this plan shall require a submittal and approval from TxDOT or their representatives.

### 583.2 DAVITS

Two (2) rescue boat davits, Coastal marine Equipment Model D39 or equal, shall be provided and installed as shown on Reference (WW). Davits shall meet the requirements of Buy America, with lifting capacity and geometry that matches what is currently on TxDOT's fleet. The davits and controls shall not interfere with opening of the emergency escape hatches from either eVSP compartment.

Davits shall meet the requirements of USCG and ABS and be capable of deploying the rescue boat efficiently and effectively. Final approval will be given by TxDOT or their representatives by witnessing full operation of the davit and deployment/retrieval of the rescue boat.

### 583.3 LIFE RAFTS

Seven (7) fifty-man IBAs shall be provided and stored on cradles at each end of the vessel as shown on Reference (XX). Once IBAs are deployed overboard, two of the cradle platforms at each end of the vessel shall be used as embarkation stations. These cradle platforms shall have hinged ladders installed beneath the cradle with locking pins that enable the ladders to swing inboard and provide an adequate stairway up to the cradle platform.

Design exception will be required for ABS review of the provided life raft capacity. Justification has previously been made with consideration of the vessel's protected route and precedence from the existing fleet. The Contractor shall be responsible for obtaining this acceptance from USCG.

Handrails to aid in embarkation for each platform shall be removable, painted yellow, and stored in a nearby readily accessible location. A large overboard ladder shall be stored below the cradles and swinging ladders to allow those disembarking to reach the deployed activated IBA below. This ladder, when set and locked in place between the cradle beams outboard of the cradle platform, shall reach

from the top of the bulwarks all the way below the waterline as shown in the drawing noted. This ladder shall be aluminum for ease of use and maneuverability.

#### 583.4 LIFE PRESERVERS

508 adult and 160 children's USCG approved life preservers shall be provided in USCG approved stowage containers generally be as follows:

- a) Two (2) adult life jackets in each Pilot House.
- b) Two (2) adult life jackets at the upper end of each stairway to the engine room.
- c) Five Hundred (500) adult and one hundred sixty (160) children's life jackets divided evenly between storage boxes located on both ends of the vessel.
- d) All hardware shall be bronze or stainless steel.

Crew life jacket storage shall be stainless steel or heavy duty fiberglass boxes as approved by TxDOT. Passenger life jacket storage at the vessel ends shall be KIDDER or equal at dimensions of 12' long by 3' wide, with weathertight doors that provide an 80% or greater opening into the lifejacket storage. The storage will be made of steel with lifting points on the roof. The storage box will be secured on the vessel by welding a strap on each side to the bulwark's gussets and welding stands to the deck below the storage box. Each storage box shall hold the required quantity of adult and child life jackets.

#### 583.5 LIFE RINGS

Provide twelve (12) USCG approved life ring buoys as located on Reference (XX). Life rings shall be plastic and an approved type. Additional attachments including lifelines, self-igniting lights, and smoke signals shall be installed as shown on Reference (XX) and as required by USCG and ABS. All life rings shall be stowed on stainless steel ring buoy holders. Each life ring shall be marked in clearly legible block capital letters with the vessel's name.

#### 584 VEHICLE BARRIER GATES

Structural, articulated, hydraulically actuated vehicle barrier gates shall be mounted at both ends of the main Deck, as shown on the ABS Reviewed Drawings. The barrier gate assemblies shall be assembled and arranged so that they lay down within the recess and deck edge at the ends of the Main Deck and shall be structurally adequate to handle vehicle loads.

Vertical barrier gate stops where the bulwark terminates shall be an 8" sch 80 pipe that is cut lengthwise to accommodate a L4"x4"x1/2" angle as shown in Reference (YY). These barrier gate stops shall be mounted on each side of the barriers and integrated at the end of the bulwarks. These supports shall stop the barrier gate in its raised position.

To ensure satisfactory operation the vehicle barrier hinge must be straight and true across the entire width of the gate. The Contractor shall closely control weld distortion of the barrier pocket structure. The barrier gate shall be lowered fully into the recess when in the retracted position. Stainless steel grease zerk fittings will be installed at every hinge pipe on the seaward side of the gate.

Each gate shall be hydraulically operated and raising and lowering shall be controlled by solenoid operated control valves located as indicated in Reference (ZZ). A control station shall be located at each

end of the vessel near the gate as indicated on the Plans. Two hydraulic cylinders on each gate as shown on the Plans shall be used to raise and lower the ramp.

Each hinge segment shall have a 316 stainless steel grease zerker fitting installed. Grease zerks shall be accessible from the end of the vessel when the gate is up. Zerks shall be located to avoid interference throughout the range of travel of the gate.

#### 584.1 BARRIER GATE HYDRAULIC SYSTEM

A hydraulic system shall be provided and installed for operating the barrier gates in accordance with Reference (ZZ). Power to actuate the gate cylinders shall be supplied from a hydraulic pump unit (HPU) located in the engine room. The complete system, including the Hydraulic Power Unit (HPU), control valves, controls, and cylinders be designed, supplied, and commissioned by Supreme Integrated Technology, Inc. or equal as approved by TxDOT.

#### 584.2 HYDRAULIC POWER UNIT (HPU)

The Hydraulic Power Unit (HPU) shall be a complete pre-engineered and tested assembly consisting of a 60-gallon steel hydraulic reservoir with the following components mounted on the reservoir at minimum:

- Two hydraulic pumps, each with an output of 12.9 GPM at 1000 PSI, each driven by a 7.5 HP, 460 VAC, 60 HZ, 3 phase, 50°C Ambient, IEEE-45, TEFC, electric motor
- Valve manifold
- Pressure relief valve
- Solenoid operated directional control valves
- Counterbalance valves
- Flow control valves
- Suction strainer
- Pressure gage
- Sight level gage
- Combination temperature/level switch
- Vent/fill pipe with replaceable hygroscopic filter/breather
- Wiring Junction Box
- Interconnecting piping and wiring

The system shall be configured to actuate both end gates with one of two pumps operating, and the second pump on standby. Each pump shall be capable of raising and lowering each gate in approximately 10 seconds at a hydraulic oil pressure not to exceed 1,000 psi.

#### 584.3 CONTROL SYSTEM

A complete control system for the hydraulic system shall be provided and installed. Remote control for the vehicle barrier at each end shall be actuated via pushbutton controls located in NEMA 4X watertight control boxes adjacent to the barrier controlled. Each control box will have five buttons arranged vertically from top to bottom in the following order:

- Emergency stop button, pull to stop

- raise gate, green
- lower gate, red
- ready bell/announcement, black
- activation button, black

The control boxes shall be fabricated from 316 stainless steel. Control buttons shall be sealed and waterproof. Except for the activation button, all control buttons shall be protected by a hinged and latched door to protect them from weather and tampering. The activation button shall be unlabeled and mounted on the bottom of the control box.

A local control panel shall be installed in the engine room adjacent to the hydraulic system HPU. The local control box shall contain all necessary controls for the HPU. The following controls shall be fitted to the front of the panel:

- Three way switch: Motor 1 Active, Off, Motor 2 Active
- Three way switch: Local Mode active, Off, Remote Mode active
- Local control push buttons: Raise Gate A, Lower Gate A, Raise Gate B, Lower Gate B, Lamp Test
- On/off indicator light, blue
- Power available indicator light, white
- Low fluid level indicator light, orange
- Emergency stop button, pull to stop

The local control panel shall include two (2) adjustable timers that control hydraulic pump run time when the control system is set for remote operation. The timer shall initially be set to 60 seconds run time.

When the controls are set to local mode, push buttons at the local control panel will be active and pressing the up/down buttons for either gate at the local panel may be used to actuate the gates. In local mode, all buttons on the remote control panels are deactivated, except for the ready bell/announcement button which will always remain active.

When the controls are set to remote mode, pressing the activation button at the "A End" or "B End" remote control boxes will activate a timer that starts the active hydraulic pump motor for a preset time and enables actuation of the gate using the up/down push buttons at that remote station.

When the ready bell/announcement button is pressed at either remote control station, a signal will be sent to the Gai-Tronics system sounding the ready bell in both Pilotheuses until the button is released. In addition, the ready bell/announcement button shall activate an announcement in all passenger spaces. See Section 430.2.

#### 584.4 CYLINDERS

Each barrier gate shall be raised and lowered by two hydraulic cylinders located in recesses in the Main Deck under each gate in accordance with the Plans. Cylinders shall be suitable for outdoor marine environment use with stainless steel rods and hardware and boots to protect the rods when extended. The exterior of the cylinder bodies and heads shall be coated similar to side shell.

## GROUP 600 - EQUIPMENT AND OUTFIT

### 601 EMERGENCY FIREFIGHTING AND EQUIPMENT OUTFIT

#### 601.1 EMERGENCY EQUIPMENT OUTFIT

Emergency equipment shall be installed as required by all applicable regulations and as shown on Reference (BBB). Required equipment not shown on Reference (BBB) is to be located as approved by the Owner. The type, quantity, location, and installation of life saving appliances shall be as required by USCG and ABS, and subject to approval of TxDOT.

The Contractor shall provide one (1) defibrillator, Philips HeartStart FRx, or equal as shown on Reference (BBB). For crew familiarity and consistency with existing fleet, the make and model shall be approved by TxDOT. One potential source of supply is:

AED123  
3232 McKenney Ave Suite 500  
Dallas, Texas 75204  
Email: mae@aed123.com  
Contact: Mae Nixon  
Phone: 713-322-7487

Additional Firefighting and lifesaving systems are described in Sections 555 and 583.

#### 601.3 FIRE DETECTION ARRANGEMENT

A USCG approved and UL listed addressable fire detection and alarm system shall be provided and installed. The system shall be based upon the Ansul Checkfire platform, or TxDOT approved equal, providing indication and alarm functions to the crew.

Remote smoke detectors, heat detectors, and manual pull stations shall be installed and interfaced with the alarm system in accordance with the manufacturer's approved manual. All fire detection and extinguishing equipment shall be provided in accordance with the ABS Reviewed Drawings and directly connected to the Siemens integrated automation system. The vessel shall be fitted with optical smoke and heat detectors as required by USCG and ABS, generally as shown on Reference (DDD), and subject to approval of TxDOT.

The Engine Room overhead shall be fitted with rate compensated temperature detectors. A minimum of two intrinsically safe optical smoke and heat detectors shall be mounted in each ESS space and connected to the fire detection system via intrinsically safe isolators. Heat detectors shall be set to trip at 130 degrees Fahrenheit. Where beams or girders extend below the ceiling, the detectors shall be located to be most effective. Pull stations shall be located as per Reference (DDD).

There shall be a fire alarm control panel (or approved remote indication panel/display) mounted in the EOS, and a repeater panel mounted in each Pilot House to display any system alarms. Audible and visual alarms shall be issued when a zone alarm becomes active. If the alarm is not acknowledged within two minutes, an audible alarm shall be automatically sounded throughout the vessel. The fire alarm system shall have power feeds from the ship service bus and from the emergency bus.

The fire alarm panel shall provide a summary fault alarm output to the IAS.

## 602 HULL DESIGNATION & MARKINGS

### 602.1 SHIP'S NAME & HAILING PORT

The ship's name and hailing port shall be placed on the fore and aft head logs as well as on the port and starboard side in block letters. Letters for name to be 12 inches high and hailing port 8 inches high. The ship's name shall be placed on the ends of the Pilot Houses on the Upper Deck bulwark below the Fwd. windows and on the Upper Deck bulwark port and starboard at midship. Letters shall be 16 inches high and outlined by continuous welds.

The name shall remain covered until delivery to TxDOT.

The vessel's official number and net tonnage shall be permanently marked on the main transverse bulkhead below deck at frame 19 above the #3 Engine by weld bead and in accordance with USCG Regulations.

### 602.2 DRAFT MARKS

Draft marks shall be 6-inch height Arabic numerals. Marks shall be permanently fixed with weld bead outline of the seven through 12-foot drafts. Marks shall be located on port and starboard sides of both ends and at midship. The bottom of each figure shall be at even feet above the bottom of the keel.

### 602.3 BUILDER'S NAMEPLATE

A builder's nameplate not larger than 18-inch x 24-inch shall be provided. The name plate shall be bronze with upset polished border and letters and a matte black background and include the vessel's name, State of Texas Emblem, year of building, TxDOT's name, the Builder's and the Architect's name and names of Texas Highway Commission Officials. Contractor to provide with a proof of the builder's nameplate for approval by TxDOT.

### 602.4 DISPLAY OF PLANS

Plans shall be mounted in suitable locations in the vessel in glazed frames including diagrams of the systems. Provide two (2) copies of piping diagrams and safety plan, reduced to 11-inch x 17-inch and plastic laminated and attached to the EOS bulkhead with a plan rack, approved by TxDOT.

### 602.5 NOTICE FRAMES

Frames with glazed permanent or hinged fronts shall be provided and sized to suit the following:

- Pilot House Rules
- Persons Allowed on the Bridge Station Bills and Drills
- Station Bill Cards Safety First Notices Deviation Cards
- USCG Certificate of Inspection
- USCG Certificate of Stability
- Public Spaces: Instruction for Fire and Emergency Drills Such as may be required by the USCG

- ABS Certificate
- Radio certificates

Fire and Safety Plan (BBB), reduced to 11-inch x 17-inch (properly oriented per station)

- One (1) in each Pilothouse.
- Two (2) in Salon, one (1) at each end.
- One (1) in EOS.

#### 602.6 SERVICE AND OTHER SPACE MARKINGS

All spaces, not otherwise required to be labeled, shall have identification plates of brass, 0.05 inch thick and at least 1 inch wide. The characters shall be engraved 0.02 inch deep and filled with black enamel except where designating flammable material stowage, in which case the enamel shall be red. In general, letters shall be 3/8 inches high.

#### 602.7 ALARM MARKING

The alarm markings shall be in at least 1.2-inch-high red letters, in visible locations.

The general alarm bell switch in the Pilot Houses shall be marked "GENERAL ALARM" All general alarm bells shall be marked, "GENERAL ALARM. WHEN BELL RINGS GO TO YOUR STATION."

The siren shall be marked, "WHEN ALARM SOUNDS VACATE AT ONCE-FIXED AGENT BEING RELEASED".

#### 602.8 MARKINGS AT FIRE FIGHTING EQUIPMENT

The various firefighting systems shall be conspicuously marked in red letters, at least 2 inches high, "NOVEC 1230 APPARATUS". Each fire hydrant shall be marked in red letters at least 2 inches high, "FIRE STATION NO. 1 ", "2", "3", etc.

Each hand portable fire extinguisher shall be marked with a number and the stowage location shall be marked with a corresponding number at least 2 inches high.

Fire axes, etc., shall bear the vessel's name.

#### 602.9 EMERGENCY LIGHTS AND EXIT SIGNS

See section 330.

#### 602.10 HEALTH SERVICE NOTICES

Notices shall generally be fabricated of engraved phenolic. Notices shall include, but not be limited to, the following examples:

- "FRESH-WATER HOSE ONLY"
- "FRESH-WATER FILLING"
- "NON-POTABLE WATER"

### 602.11 LABELING-MISCELLANEOUS

Life rings, life preservers, life rafts and boats shall be labeled with letters cut in and painted and other lettering and stenciling shall be accomplished as normally required for a vessel of this type and intended use, if not specifically covered elsewhere herein. Labels and signage on the Main Deck shall not interfere with vehicle parking. There are no Hazardous ID zones on the vessel.

All valves and operating gear shall be labeled to indicate their service use. Labels to be brass material, machine engraved, with minimum 5/16 inch letters of size to suit condition and easy legibility, banded with 2 ea., 316 stainless steel tie bands.

All wiring cables shall be labeled to designate circuit number with machine embossed aluminum, including aluminum bands.

Lines shall be painted on the main deck to indicate vehicle lanes as indicated on the Plans. Watertight doors below the main deck shall be provided with signs.

Ventilation ducts shall be marked with system number preceded by the work "EXH" or "SUP" as the case may be. Lettering shall be stenciled using black paint except where the color of the pipe or duct is so dark that white must be used for marking to be legible.

Dampers and closers in the ventilation system shall be labeled as to open and closed position and as to the compartment or system affected. The minimum letter size shall be 3/8 inch. "Hearing Protection Required" signs shall be provided in accordance with OSHA requirements. Labels shall be installed above the doors to each space indicating the use or name of the space, i.e., "Passenger Cabin", "Engine Room", "Stack", "Deck Locker", etc. of engraved phenolic material and minimum letter size 1/2 inch.

Painted signs shall be provided as shown in Reference (GGG).

### 602.12 STACK INSIGNIA

The Contractor shall provide two (2) stack insignias with the Texas Department of Transportation logo one on each side of the stack, fabricated with Lexan, exterior vinyl side and sealed.

### 602.13 PIPE COLOR CODE

All piping systems, valve hand wheels/levers shall be color coded including system name and flow direction. Pipe marking shall be provided as described below:

- a) Color shall be provided by TxDOT.
- b) Markings for system name and direction shall be wrapped with matching color tape at each end.
- c) Markings shall be applied at entry and exit to each compartment or space.
- d) Markings shall be of suitable size to easily read from main catwalks or walkways in all compartments, from the Aluminum floor plating in the Engine Room and Propulsion Room.
- e) Provide a minimum of two markings per compartment.
- f) System names shall be spelled properly.

## 604 LOCKS, KEYS & TAGS

All hardware shall be heavy duty marine quality. Fasteners shall be stainless steel or brass to match the item secured, and with countersunk heads where practicable. Doors to spaces and areas not specifically mentioned shall be provided with the same hardware as doors to similar spaces and areas.

### 604.1 LOCKS

Watertight doors on the main deck, the service box located on the "B End" starboard, and the louver doors for all vents which are accessible to passengers are to be padlock capable. Provide and install a ship set of paddle locks with common keys. Provide at least ten (10) keys for the padlocks to the Owner. Padlocks shall be manufactured by Abloy or equal. The other doors to have locks will be those listed in section 624.5 using the part numbers indicated. Locks shall be provided as indicated on the Plans.

All heads shall have locks that clearly indicate "occupied" and "vacant" in color.

### 604.2 CLOSERS

Exterior weathertight doors, public toilet entrance doors, doors at stairway enclosures, and fire doors at the Salon midship shall be fitted with door closers. Closers shall be standard or parallel arm dependent upon suitably rated for intended location. All closers shall be brass, bronze or stainless steel marine grade, extra heavy-duty type. All closers shall be on the interior swing of doors.

### 604.3 HINGES

All doors shall be fitted with 3-1/2 inch butt hinges. Hinges are to have 1/4 inch stainless steel non-rising loose pin with button tips.

Butts are to be fitted with nylon bearings and washers.

### 604.4 KEYS

Two (2) keys shall be provided for any keyed lock. All padlocks shall have common keys. All keys shall be properly labeled and hung in a bulkhead mounted key box located inside the "B"-End Pilot House. A typed key legend shall be provided inside the key box.

### 604.5 MISCELLANEOUS

All doors shall be provided with hard door stops, including watertight doors. Doors shall be fitted with heavy duty hold backs. Fastenings, in general, including hold backs shall be stainless steel unless otherwise specified. The intent of the hard door stop is to prevent overtravel of automatic closers and/or contact of the door with the ship structure. Door stops shall be sized accordingly.

## 611 HULL FITTINGS & GUARDS

### 611.1 TIRE GUARDS

Tire guards shall be 3 inch schedule 80 steel pipe as shown on Plans. Ends shall be closed with welded pipe caps. Tire guards shall be arranged as shown in the Bulwarks and Misc. Details (Drawing 22048-001-111-0) and to the satisfaction of the TxDOT representative. Tire guards shall have no sharp edges so as to prevent damage or injury and shall be continuously welded.

### 611.2 CLEATS AND DECK FITTINGS

36 inch steel cleats with solid base shall be installed on the Main Deck as shown on the Plans. Closed chocks with 6 inch x 12 inch opening in bulwarks shall be installed adjacent to cleats as shown on Plans. Two (2) heavy duty 316 stainless steel cleats shall be welded to the rail near the end of each rescue boat for securing painters when boats are deployed. All necessary insert plates and localized stiffening shall be provided.

### 611.3 MISCELLANEOUS

Provide additional bits, bollards, cleats, mooring eyes, rings, padeyes, and other fittings generally required on a vessel of this type and size and as directed by TxDOT.

### 611.4 GUARDS IN DANGEROUS PLACES

Suitable covers, guards, or rails approved by TxDOT shall be removable and installed in way of all exposed and dangerous places such as gears, machinery, etc.

### 611.5 TROLLEY & PAD EYES

A trolley and pad eyes shall be provided to allow lifting and moving of any equipment weighing 100 pounds or more to the equipment removal landing pad in the engine room and capable of supporting a 7000-pound ratchet chain hoist. This weight rating shall be confirmed with the vendor and TxDOT once the final weight of the engine and generator are given.

Suitable pad eyes shall be installed above pumps, motors, engine parts, shaft coupling, air compressors, strainers, Energy Storage System, etc. to allow unshipping these items. Pad eyes or lifting points shall be installed in each engine room stairway and stack entry for the removal of the Energy Storage System to the satisfaction of TxDOT. A lifting eye holding bracket is to be installed inside of the engine room door to store lifting eyes for the engine room hatch. Lifting eyes shall be screwed into bracket and secured.

A telescoping I-Beam trolley hoist rated for 7,000 pounds shall be located in the overhead of the deckhouse passageway between Frame 3 "A End" to Frame 3 "B End". This weight rating shall be confirmed with the vendor and TxDOT once the final weight of the engine and generator are given. It should include a trolley and chain fall to transfer equipment items to and from the engine room to the main deck.

Transverse beams and longitudinal girders IWO the Voiths on frames 55-63 shall be bolted as shown in References (F), (G), and (H). The beams will be bolted but there will be no soft patch. These beams will

be unbolted in case that the Voiths need to be removed. At that time the deck above the bolted connections will be cut out. The final bolting arrangement shall be to the satisfaction of ABS Rules and shall be approved by TxDOT.

A removeable I beam shall be installed at Frame 59 for the Voith cover plate removal. The beam shall be capable of supporting the weight of the cover plate of the Voith. Custom fit and details shall be approved by TxDOT and made by the shipyard. The I Beam is suspended by a series of plates welded to the overhead beams. The beam is to slide through the plates to position over the eVSP Unit, and when not in use, slide off into the wing out of the way.

## 612 RAILS, STANCHIONS & LIFELINES

Handrails shall be provided on all inclined ladders, platforms, and around machinery in accordance with the Plans.

### 612.1 HANDRAILS

Handrails shall be fabricated from steel pipe installed throughout the machinery and void compartment spaces, except in way of electrical switchboards where non-conducting material shall be used.

Handrails shall be neat, with smooth radius corners at all turns or bends. All handrails shall be installed in portable segments where necessary to facilitate machinery maintenance and removal. Handrails supported from bulkheads shall have a clear hand space of at least 2 inches. Stand-offs shall be L shaped from the bottom of the pipe rail.

Handrails at stairs and ladders to be three course of 1-1/4 inch, schedule 40, 316 stainless steel pipe fastened to ladders or structure by welding with suitable 316 stainless steel brackets or 316 stainless steel clips of round bar as indicated on drawings. Rails shall be supplied on both sides of all stairs and ladders. The rails on the stairway from the main deck to the passenger cabin shall be constructed of closely spaced stainless steel pipe and in accordance with the USCG regulations and incorporate suitable mid-rails for children fabricated from 316 stainless steel schedule 40 pipe, brackets, and clips.

### 612.2 ENGINE ROOM RAILS

Walkways shall be installed in accordance with ABS Reviewed Drawings and details shown in Reference (JJJ). Rails shall be portable where necessary to facilitate machinery removal. Rails on stairways leading to the engine room from the Main Deck shall be 316 stainless steel. All welding on rails shall be ground smooth.

### 612.3 STORM RAIL

Storm rails shall be 1-1/2-inch 304 stainless steel pipe, brackets and clips and fitted on outside of all Deck Houses and in interior passenger spaces 36" above the finished deck and 3" out from bulkheads with ends turned in to the bulkheads and bent intermediate supports as necessary. Storm rails shall be as designed in Reference (HHH).

## 612.4 SAFETY RAILS

Safety rails shall be 1 inch schedule 40, 304 stainless steel pipe at the sides of the around the front of each Pilot House, and the top of each Pilot House generally as indicated in Reference (III).

## 612.5 SAFETY CHAINS

Safety chains shall be provided at each end of the vessel, fitted with shackles and connecting rings. Ends of one (1) row of galvanized coil proof safety chain to be secured to steel plate clips welded to bulwark. King posts shall be fitted with a 2 inch x 6 inch long round bar to receive connecting ring.

Safety chains shall similarly be provided between rescue boat cradles and the bulwarks to prevent access outboard of the rescue boats in way of the reduced height bulwarks.

## 612.6 PERFORATED FENCE

A removable perforated fence shall be installed at each end of the vessel surrounding the rescue boats and other equipment as shown in Reference (WW). This perforated fence will have the same specifications as the fencing on the Observation Deck and Bridge Deck. Fence material shall be 316 stainless steel. Deck sockets shall be 316 stainless steel and the stanchions and rails shall be 304 stainless steel pipe. Arrangement and gate locations shall be to TxDOT's satisfaction.

## 623 LADDERS, FLOOR PLATES & GRATINGS

Ladders, gratings, and platforms shall be designed to support loads of at least 200 lbs per square foot, in addition to equipment foundation loads. Toe plates shall be fitted on inclined ladders and at the perimeters of platforms and floor plates.

### 623.1 LADDERS

Inclined ladders shall be provided in accordance with the Plans. Passenger stairways shall have a minimum tread width of 36 inches and inclined at not more than 45 degrees from the horizontal. Inclined ladders leading down to the Engine Room shall be fitted with stainless steel sheet metal rain plates to protect equipment below the stairs. Tread spacing and depth of all stairs shall satisfy USCG requirements and per ASTM F1166 guidance.

Note that stairs from the Main Deck to the Passenger Lounge on each end are not considered Type 1 stairs. Design exception will be required for this arrangement. The arrangements are consistent with existing vessel arrangements across the operator's fleet and have been approved by the OCMI to provide an equivalent level of safety and protection. The Contractor shall obtain alternative compliance from the OCMI as required to approve this arrangement.

Stair treads on all inclined ladders below main deck shall be 1/2 inch steel plate with 1/4 inch thick non-combustible fiber plate stair tread with molded in grit surface. The fiber plate stair tread covers shall be installed with a yellow edge for visibility and safety.

Stair treads on all inclined ladders above main deck shall be 3/8 inch steel plate with 3/16 inch thick non-combustible fiber plate stair tread with molded in grit surface, McNichols model F210116C.

Fasteners for treads shall be countersunk 316 stainless steel. Each step shall be sealed around the edges and at each hole with silicone caulking.

Ladders shall be removable unless noted otherwise on the Plans. Vertical ladders shall be provided for access to tanks, escapes, engine casing, and where inclined ladders cannot be fitted. Vertical ladders shall have 7/8 inch square rungs, 3 inch x 3/8 inch stringers on 16 inch centers and a minimum toe clearance of 7 inches.

### 623.2 GRATING

Gratings shall be 1" thick galvanized open steel bar grating or 2" thick fiberglass as identified on the Plans. Grating or deck plates shall be provided in way of machinery and equipment to provide a secure footing for maintenance operations.

### 623.3 DECK PLATES

Deck plates shall be provided in the engine room and propulsion rooms in accordance with the Plans. Deck plates shall be 1/4 inch thick aluminum diamond plate unless in way of evacuation routes as shown in Reference (JJJ) where they shall be 3/16 inch thick painted steel diamond plate. Deck plates shall be supported on a steel angle framing network and shall be fitted with hold-down countersunk stainless steel screws. Deck plate angle frames shall not interfere with machinery maintenance envelopes. Where interference is unavoidable, provide bolted take down joints to allow removal of the floor plate angle frames. Deck plates shall be no larger or heavier than can be conveniently handled by one person. Aluminum shall be insulated from the steel structure.

Hinged portable plates shall be provided where frequent access is necessary such as for access to valves, strainers, etc., below floor plates. Hand holes shall be provided for lifting portable plates. Coaming bars shall be fitted around permanent openings. Supports and coaming angles shall be bolted where machinery requires periodic removal. Grating or deck plates shall be provided in way of machinery and equipment to provide a secure footing for maintenance operations.

### 623.4 ELECTRICALLY INSULATED FLOOR MATS

A fabric reinforced electrical grade rubber floor mat shall be provided in front of the main switchboard and emergency switchboard, outside each door to the EOS and in front of each engine room 110VAC panel.

### 623.5 MACHINERY PROTECTION

Shafting couplings, flywheels, belt drives, and other rotating or exposed machinery shall be protected with removable steel guards. Guards shall be steel plate, expanded metal, or bars as appropriate. Layout, design and arrangement of guards shall be approved by TxDOT prior to fabrication.

### 623.6 CATWALK

An open grating catwalk, properly supported for 300 lb./sq.ft. uniform load with handrails both sides, shall extend from the engine room to the propulsion motor room at both ends. Catwalks shall be provided to vertical ladders in each compartment. Catwalks in the engine room shall have floor plates.

## 623.7 VOITH ROOM

Aluminum floor plates similar to those in the engine room shall be provided around the Voith propulsion units except in way of evacuation routes where painted steel diamond plates shall be used. Handrail arrangement and floor plate height shall be in accordance with the Plans.

## 623.8 PILOT HOUSE FRONT ACCESS PLATFORM

An access platform shall be provided to the front of each pilot house in accordance with the Plans.

## 624 NON-STRUCTURAL CLOSURES

### 624.1 DOORS – GENERAL

Exterior doors in the house sides shall hinge toward the ends. Exterior doors shall be fitted with watersheds of 1-1/2 inch x 1/2 inch flat bar except where protected by deck overhangs.

Tops of all doors shall be 6 foot – 6 inches above the finished deck covering. All doors and frames shall be reinforced in way of hardware.

All nonstructural and joiner doors shall feature stainless steel satin finish; doors shall be as provided by Deansteel. Widths and sill heights shall be as specified and as required by the ABS and Coast Guard. Doors shall have fire ratings in accordance with the bulkheads in which they are installed.

### 624.2 WATERTIGHT DOORS

Watertight doors shall meet the requirements of the Coast Guard and ABS. Watertight doors shall be fitted in watertight bulkheads between each compartment. Indicators shall be located in each pilot house and in the EOS monitoring system to show the open or closed status of all watertight doors. Design exception will be required for the use of dogged watertight doors for consistency with the existing fleet. This justification has been made based on safety from crew familiarity and with consideration of the vessel's protected route. The Contractor shall be responsible for obtaining this alternative compliance from USCG.

### 624.3 WEATHERTIGHT JOINER DOORS

Hinged weathertight joiner doors shall be installed as shown on the Plans. The EOS doors shall have acoustic insulation and be fitted with thermal pane windows and heat-treated glass.

### 624.4 INTERIOR JOINER DOORS

Hinged joiner doors shall be installed as shown on the Plans. All doors shall be clearly marked by the manufacturer for fire rating.

Louvers shall be provided in doors where necessary for ventilation, as directed by TxDOT and subject to approval by the U.S. Coast Guard.

Door sills shall be of the inverted channel type fitted to the heights specified with stainless steel thresholds. The underside of the sill shall be scribed to suit the camber and sheer of the deck. Where

sills are specified as "to suit deck covering," they shall be scribed to suit camber and sheer with the height of the sill determined by the deck covering thickness to finish flush with the sill and stainless steel threshold then fitted. Doors shall be fitted with stainless steel frames and stainless steel hinges.

Two A-60 rated fire doors shall be located at amidships on the Salon Deck; one on each side of the Salon. They shall be fitted with door closers. These doors shall be normally open and held in place by electromagnetic holdbacks. The power supply, controls, and indications for the magnetic holdbacks shall be located in both Pilot Houses and shall comply with Subchapter H requirements. The holdbacks shall be controllable by switches at each Pilot House and locally on each side of the door; the holdbacks shall also be released by activation of the fire detection system. The Pilot House switches shall use maintained position switches or latching relays; momentary pushbutton releases shall not be used. Fire door position shall be monitored and indicated within the IAS.

### 624.5 CYPHER LOCKS

Trilogy cypher door locks (part number DL2700WP/26D shall be installed on the following doors:

- Both engine room access barrier doors located on the Main Deck
- The door from the Salon to the Cleaning Gear Locker
- The door from the Salon to the Electrical Equipment Space
- The door from the Salon to the "A End" Pilothouse stairway
- The door from the Salon to the "B End" Pilothouse stairway
- Door from the "A End" Pilothouse to the Bridge Deck exterior
- Door from the "B End" Pilothouse to the Bridge Deck exterior
- The security cabinet under the starboard desk located in the "B End" pilothouse

Locks will be coded to 1-2-3-4 until reset by TxDOT upon acceptance.

### 624.6 MANHOLES

Bolted plate manholes shall be provided to all tanks and to spaces without other specified openings where necessary for access. Manholes shall be gasketed oil-tight or watertight depending on the space or tank served. Covers shall be the same thickness as the adjacent plating but not less than 3/8" thick. Bolts, lock nuts and washers shall be 316L stainless steel. Vertical ladders shall be provided under each of these manholes. Provide additional similar manholes that may be required for accesses and where not indicated on Plans to be located by the Contractor to TxDOT's approval.

### 624.7 SOFT PATCHES AND PORTABLE PLATES

One (1) soft patch shall be provided in accordance with the Plans in the Main Deck above the Engine Room suitable for removal at a future date for machinery removal. Piping, cables, etc. shall not be run under or attached to soft patches. Sheathing shall be arranged with cover strips at joint around perimeter of soft patches and portable plates.

Two (2) soft patch areas shall be provided in accordance with the Plans in the Main Deck above the each Voith propulsion room suitable for removal by burning at a future date for machinery removal. Piping, cables, etc. shall not be run under or attached to soft patches. Sheathing shall be arranged with cover strips at joint around perimeter of soft patches and portable plates.

Provide portable plates that may be required for access to trunks, etc., located by the Contractor to the approval of TxDOT.

All bolted plates in the Main Deck are to have the top plate flush with the steel deck and made of plate similar to the deck plating.

Provide quick acting flush watertight scuttles in the Main Deck to provide emergency escapes from below deck compartments. Scuttles shall be located as shown on the Plans. Vertical ladders shall be installed under each scuttle. Non-skid deck covering shall be installed on deck directly under each scuttle. Battle lanterns shall be installed below deck in the vicinity of deck scuttles as generally shown in Reference (AA).

## 625 AIRPORTS, FIXED PORTLIGHTS, AND WINDOWS

Windows, airports, and fixed lights shall be located and installed where shown on the Plans. Centers of airports and fixed lights shall typically be located at 63" above the finished deck covering. Sill heights specified for windows are the lower edge of the clear opening above the finished deck.

All airports, portlights and windows which are set in lined bulkheads shall be boxed with 18-gauge 316 stainless steel sheet metal fitted neatly all around openings and boxed over stiffeners. Trim shall be fitted tight against the plating or window frame and shall extend inboard and flange over adjacent linings with hemmed edge. Trim shall follow the sheer and camber and shall be beveled away from all openings unless otherwise directed. Where windows are close together, upper and lower sills shall be continuous. All furring and supports shall be of metal unless otherwise directed.

### 625.1 PILOT HOUSE WINDOWS

The Pilot House shall have windows located, sized, and shaped as shown on the Plans. The Contractor shall provide spring loaded tinted roller window shades for each window in the pilot house. Windows shall match exactly as is specified in Reference (MMM) and any deviation shall need approval by TxDOT. The main pilothouse windows for visibility and navigation shall be provided by Seaclear Industries LLC and shall have clear heaters to deter glass fogging integrated into the windshield. Any windshield not produced by Seaclear must be approved by TxDOT before acquisition and shall not be accepted without a means of defogging approved by TxDOT as well. The window heaters shall be equipped with manual or automatic controls as recommended by Seaclear and agreed upon with TxDOT.

There shall also be sliding windows on the port and starboard side of each pilothouse that is detailed in the drawing mentioned in the previous paragraph. These sliding windows shall seal the pilot house at a maximum marine grade level in excess of weathertight. Sliding windows shall be able to slide horizontally and not vertically in motion and shall be able to lock in both open and closed positions.

The three (3) center end facing windows in each Pilot House shall each be fitted with one window wiper, Wynn or TxDOT approved equal. The wipers shall be pantograph type with the motors and gear units mounted inside the Pilot House above the ceiling system. Individual control for each wiper shall be provided on the "A End" port and "B End" starboard deck mounted Pilot House control console. Wipers shall operate on 120VAC.

## 625.2 CABIN WINDOWS

Passenger Cabin and Crew Room windows shall be fixed type and located as shown on the ABS Reviewed Drawings.

## 625.3 ENGINEER OPERATING STATION WINDOWS

Windows in the EOS shall be fixed type thermal pane located as shown on the ABS Reviewed Drawings.

# 631 SURFACE PREPARATION AND PAINTING

## 631.1 GENERAL

The vessel shall be painted employing materials and procedures to high quality marine standards. Paints shall be applied in accordance with the paint manufacturer's guidelines. Unless otherwise specified, or approved of by the manufacturer, paint and other coating materials are not to be thinned with solvent or altered in any manner by the Contractor.

The Contractor shall maintain a calibrated low voltage (under 100 volts) holiday detector and electronic mill gage for use by TxDOT's inspection representative upon request. Areas found to contain pinholes or insufficient dry film thickness shall be repaired or recoated. All fixtures, equipment and adjacent surfaces shall be properly protected during painting and upon completion of work, all paint and varnish spots shall be removed from glass, plumbing fixtures, equipment, deck coverings, etc. All parts or spaces including piping, ducts, etc., not specifically mentioned or covered by general clauses shall be painted or finished to conform to surrounding or comparable spaces.

No finish painting shall be done in compartments or tanks required to be tested until after the completion of such test. The last coat of paint in the machinery spaces shall not be applied until after completion of trials. All tanks, piping, fixtures, valves, pumps, and any other parts in the fresh water system shall be thoroughly cleaned and flushed in accordance with an approved procedure just prior to delivery of the vessel.

Interior colors and exterior colors shall be International Marine Ltd. paint as selected by TxDOT. Contrasting colors and or stripe coats shall be used for intermediate coats of paint. Colors shall be selected by TxDOT.

Coatings shall be applied to the following areas:

### (a) Vessel Exterior

- i. Hull, keel to 11 foot 6 inch waterline including appendages.
- ii. Hull above waterline, bulwarks, deck fittings, rails, stanchions, hatches, coamings, ladders, exterior deck heads, stacks, masts, deck house sides.
- iii. 316 stainless steel hand rails shall be smooth and polished and without paint. All other handrails shall be sanded smooth and painted as deck house sides.
- iv. Main Deck, Observation Deck, Upper Deck, Bridge Deck & Top of Pilot House (Deck edges not covered with non skid coatings) (Decks under non skid coatings).
- v. Non skid coating- Main Deck.
- vi. Non skid coating- Observation, Upper, Bridge Decks and top of Pilot House.

vii. Deck machinery to be power cleaned where the coatings are damaged and recoated with maintaining manufacturers original color.

(b) Vessel Interior

- i. Landings at ladders and stairwells.
- ii. Interior Steel Structure behind insulation above main deck.
- iii. Interior Exposed Steel Structure above the main deck.
- iv. Interior Exposed Steel Structure below the main deck.
- v. Interior Steel Structure below the main deck behind insulation.
- vi. Steel Structure inside Engine Casing/Stack and painted deck areas.
- vii. Peak Voids.
- viii. Engine Room Bilges (Inside 10 foot 6 inch off centerline girder).
- ix. Engine Room (separate from bilge).
- x. Skeg, fenders and other inaccessible voids.
- xi. Wood.
- xii. Brass and Polished Stainless Steel- to be polished prior to delivery and not painted.
- xiii. Pilot House Window Trim.

(c) Miscellaneous

i. Exterior disturbed surfaces

Any exterior surface disturbed by burning or welding which has occurred following applications of any intermediate coatings shall be recoated. Surfaces shall be spot blasted or powered cleaned, with surrounding paint edges feathered to ensure smooth finish. The area shall be re-coated to the original system.

ii. Surface Depressions

Surface depressions caused by "over grinding" on exterior surfaces shall be repaired micro balloon faring compound applied in accordance with manufacturers product data sheet.

Paints applied to piping, machinery, and equipment which operate at temperatures over 120 degrees F shall be appropriately rated for that higher temperature service.

Paint lines shall be applied on the hull with weld beads 2 inches long at intervals of 3 feet for guidance in repainting side shell and bottom.

Should the vessel remain undelivered for sixty (60) days after launching, it shall be drydocked, cleaned and coatings repaired as necessary and given one (1) additional coat of anti-fouling if inspection indicates deterioration or fouling of the existing paint.

## 631.2 CLEANING, BLASTING, AND COATING SPECIFICATIONS

### 1. DEFINITIONS OF TERMS AND ACRONYMS SPECIFIC TO CLEANING, BLASTING AND COATING

- 1.1. The Society for Protective Coatings – Surface Preparation Standards and Specifications (SSPC SP) cover the requirements for the cleaning of unpainted or painted steel surfaces by the use of abrasives.
- 1.2. Surface preparation in accordance with the SSPC SP standards includes a cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products, and other foreign matter.

- 1.2.1. SSPC-SP 6 (Commercial Blast Cleaning) – Random staining shall be limited to no more than 33% of each unit area of surface, and may consist of light shadows, slight streaks, or minor discolorations caused by stains of rust, stains of mill scale, or stains of previously applied coating.
- 1.2.2. SSPC-SP 10 (Near-White Blast Cleaning) – Random staining shall be limited to no more than 5% of each unit area of surface, and may consist of light shadows, slight streaks, or minor discolorations caused by stains of rust, stains of mill scale, or stains of previously applied coating.
- 1.2.3. Sand Sweep and Spot Blast Cleaning – Sandblasting an entire area sufficient enough to remove all marine growth, old fouling, rust and abraded areas and provide an anchor pattern suitable for top coating and sandblasting only a small portion of the area to achieve Commercial Blast Cleaning standard.

## 2. CLEANING, BLASTING, AND COATING REQUIREMENTS

- 2.1. The vendor shall comply with all applicable OSHA standards to include 29 CFR 1910.1025, General Industry Lead Standard and 1910.146, Confined Space Entry. The vendor shall provide TxDOT a written program addressing compliance with the following items before performing work: Personnel monitoring, respiratory protection, protective work clothing and equipment, housekeeping, hygiene facilities and practices, medical surveillance, medical removal protection, employee information and training, signs, and record keeping.

NOTE: Manufacturer items listed in this specification are proven coating applications. TxDOT reserves the right to test and accept or reject any equivalent product submitted on the response before award of a purchase order. If requested by TxDOT, part supplier shall monitor preparation and coating applications.

- 2.2. All equipment, glass, nameplates, electric cables, etc. on board the ferryboats shall be protected from sandblasting and painting operations by the vendor. Any equipment damaged by the vendor's operations shall be repaired or replaced at the vendor's expense.
- 2.3. During surface preparation the vendor shall remove oil, grease and other contaminants from entire area using a chemical cleaner and ensure that surface areas are clean from all sand, dust, etc. The chemical cleaner shall not be allowed to dry before removing with fresh water and then blown dry prior to application of any materials.
- 2.4. Any areas affected by overspray from sandblasting shall be recoated. If any area is affected by extreme overspray, the entire area shall be recoated.
- 2.5. No blasted surfaces shall stand overnight without specified coating. TxDOT Representative shall be notified of All/Any damaged discovered during blasting.
- 2.6. Power mixers shall be used on all coating materials. Main deck non-skid coating shall be mixed and poured, no scrapping of buckets on to deck.
- 2.7. Only full units of coating materials shall be mixed at all times. No partial units shall be mixed.
- 2.8. Coatings shall not be thinned more than 10% by volume. Only thinners recommended by the manufacturer of the coatings shall be used.
- 2.9. All recommended wet film thickness readings are for paints that have not been thinned. If thinners are used, the wet film thickness readings shall be increased accordingly. Wet mil

readings shall be taken during application of all materials.

- 2.10. Dry mil readings shall be taken of each coat.
- 2.11. Proper painting practices and procedures shall be followed at all times.
- 2.12. No application shall take place after daylight hours.
- 2.13. No coating materials shall be applied if humidity is 85% or higher.
- 2.14. No coating materials shall be applied if temperature is 45°F or lower. Unless approved by coating manufacturer.
- 2.15. Anchor pattern on all blasted surfaces shall be 1.5 - 2.5 mils deep.
- 2.16. Any new steel work or pipe work shall be blasted and primed with inorganic zinc prior to being used on the ferries.
- 2.17. Dehumidifying equipment shall be used when paint is being applied to any compartment. This equipment shall continue to be used until all coatings have been applied and completely dried.
- 2.18. Forced air ventilation shall be used until all vapors and fumes have been exhausted in all compartments.
- 2.19. Minimum and maximum cure and dry times shall be in accordance with manufacturer's recommendations.
- 2.20. Painting Certificates shall be provided to TxDOT upon vessel departure from shipyard.

### 3. WATER LINE DOWN

The purpose of the following shall be to apply coatings to the underwater hull surface.

"A" SYSTEM – SAND BLAST TO SSPC-SP10 (NEAR WHITE BLAST CLEANING)

- 3.1. "A" SYSTEM – SANDBLASTING: Shall be performed as follows:
  - 3.1.1. Surface Preparation: The entire area shall be sandblasted to achieve the SSPC-SP 10 standard.
  - 3.1.2. Coating Application
    - 3.1.2.1. Apply one full coat of red epoxy primer at 7.0 wet mils for a dry film thickness of 5.0 mils.
    - 3.1.2.2. Apply one stripe coat of red epoxy primer by brush to cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.
    - 3.1.2.3. Apply one full coat of gray epoxy primer at 7.0 wet mils for a dry film thickness of 5.0 mils.
    - 3.1.2.4. Apply one stripe coat of gray epoxy primer by brush to cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.
    - 3.1.2.5. The first coat of antifouling shall be applied while the epoxy is still tacky. If the epoxy is allowed to dry then a tack coat shall be applied before

applying the first coat of antifouling.

- 3.1.2.6. Apply one full coat of red tin free antifouling at 8.4 wet mils for a dry film thickness of 5.0 mils. Minimum dry time of six hours at 77°F.
- 3.1.2.7. Apply one full coat of black, tin free antifouling at 8.4 wet mils for a dry film thickness of 5.0 mils. Minimum dry time of 24 hours prior to immersion.
- 3.1.2.8. Paint draft marks, etc.

#### 4. WATER LINE UP TO AND INCLUDING RUB RAIL

The purpose of the following shall be to apply coatings from the water line up to and including the rub rail.

"A" SYSTEM – SAND BLAST TO SSPC-SP 10 STANDARD (NEAR WHITE BLAST CLEANING)

4.1. "A" SYSTEM – SANDBLAST TO SSPC-SP 10 STANDARD: Shall be performed as follows:

- 4.1.1. Surface Preparation: Sandblast entire surface area to achieve SSPC-SP 10 standard.
- 4.1.2. Coating Application
  - 4.1.2.1. Apply one full coat of red, surface tolerant epoxy at 7.0 wet mils for a dry film thickness of 5.0 mils.
  - 4.1.2.2. Apply one stripe coat of red, surface tolerant epoxy by brush to all angles, cut-outs, weld seams, and any other area the painter would have difficulty in applying full coating thickness.
  - 4.1.2.3. Apply one full coat of black, surface tolerant epoxy at 7.0 wet mils for a dry film thickness of 5.0 mils.
  - 4.1.2.4. Apply one stripe coat of black, surface tolerant epoxy by brush to backs of all angles, cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.
  - 4.1.2.5. Apply one full coat of black, polyurethane epoxy finish at 4.0 wet mils for a dry film thickness of 2.0 mils.
  - 4.1.2.6. Apply one stripe coat of black, polyurethane epoxy finish by brush to all cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.
  - 4.1.2.7. Paint draft marks, etc.

#### 5. SUPERSTRUCTURE (INTERIOR OR EXTERIOR STEEL ABOVE THE MAIN VEHICLE DECK)

The purpose of the following shall be to apply coatings from the rub rail over the bulwarks down to the Vehicle deck and any interior or exterior steel above the main deck.

"A" SYSTEM – SSPC-SP 10 STANDARD (NEAR WHITE BLAST CLEANING)

5.1. "A" SYSTEM – SANDBLASTING: Shall be performed as follows:

- 5.1.1. Surface Preparation: Sandblast entire surface area to SSPC-SP 10 standard.
- 5.1.2. Coating Application

- 5.1.2.1. Apply one full coat of red, surface tolerant epoxy at 7.0 wet mils for a dry film thickness of 5.0 mils.
- 5.1.2.2. Apply one stripe coat of clear sealer epoxy by brush to backs of all angles, cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.
- 5.1.2.3. Apply one full coat of gray, surface tolerant epoxy at 7.0 wet mils for a dry film thickness of 5.0 mils.
  - 5.1.2.3.1. Crushed glass shall be applied as non-skid on the Bridge deck, Observation deck, and Walkaround deck.
- 5.1.2.4. Apply one stripe coat of gray, surface tolerant epoxy by brush to backs of all angles, cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.
- 5.1.2.5. Apply one full coat of white, polyurethane epoxy finish at 4.0 wet mils for a dry film thickness of 2.0 mils.
- 5.1.2.6. Apply one stripe coat of white, polyurethane epoxy finish by brush to backs of all angles, cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.
- 5.1.2.7. Apply one full coat of polyurethane epoxy finish to trim at 4.0 wet mils for a dry film thickness of 2.0 mils. Color dependent upon trim colors.
- 5.1.2.8. Apply second full coat of polyurethane epoxy finish to trim at 4.0 wet mils for a dry film thickness of 2.0 mils. Color dependent upon trim colors.
- 5.1.2.9. Apply third full coat of polyurethane epoxy finish to trim at 4.0 wet mils for a dry film thickness of 2.0 mils. Color dependent upon trim colors until color coating is complete.

## 6. VEHICLE DECK

The purpose of the following shall be to prepare and paint the main Vehicle deck. Main deck non-skid shall be mixed and poured at all times, any scraping of buckets shall be into next mixed bucket NEVER DIRECTLY ONTO MAIN DECK. This includes main deck, escape route paths and all stair platforms.

“A” SYSTEM – SANDBLAST TO SSPC-SP 10 STANDARD (NEAR WHITE BLAST CLEANING)

### 6.1. “A” SYSTEM – SANDBLAST TO SSPC-SP 10 STANDARD

- 6.1.1. Surface Preparation: Sandblast entire main deck (bulwark to bulwark) to achieve SSPC-SP 10 standard. All tire guards, bulwarks, rescue boat equipment and miscellaneous items on the main deck shall be protected from sandblasting and coating.
- 6.1.2. Coating Application
  - 6.1.2.1. Apply one full coat of Zinc-Rich epoxy at 5.0 wet mils for a dry film thickness of 3.0 mils.
  - 6.1.2.2. Apply one full coat of bronze aluminum, surface tolerant epoxy at 9.4

wet mils for a dry film thickness of 6.0 mils.

- 6.1.2.3. Apply one full coat of gray high solids extended durability non-skid deck epoxy at 40.0 wet mils for a dry film thickness of 38.0 mils.
- 6.1.2.4. Apply stripe coat of polyurethane at 4.0 mils wet for a dry film thickness of 2.0 mils for color coding and striping purposes as directed by designated TxDOT representative until color coating is complete.

## 7. GATE AREAS AND RUNNING LIGHT SHIELDS

The purpose of the following shall be to prepare and paint the vessels from the gate hinge to the end of the vessel, including both sides of each gate. Also included in this item are the running light shields. Shall be performed as follows:

- 7.1. SURFACE PREPARATION: Sandblast entire surface area to achieve Near-White Blast Cleaning standard SSPC-SP 10.
- 7.2. COATING APPLICATION
  - 7.2.1. Apply one full coat of zinc-rich epoxy at 5.0 mils for a dry film thickness of 3.0 mils.
  - 7.2.2. Apply one stripe coat of zinc-rich epoxy by brush to backs of all angles, cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.
  - 7.2.3. Apply one full coat of red, surface tolerant epoxy at 8.2 wet mils for a dry film thickness of 6.0 mils.
  - 7.2.4. Apply one stripe coat of red, surface tolerant epoxy by brush to backs of all angles, cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.
  - 7.2.5. Apply one full coat of black, surface tolerant epoxy at 8.2 wet mils for a dry film thickness of 6.0 mils.
  - 7.2.6. 20 feet of vehicle deck area to refer to section 6.0.

## 8. COMPARTMENTS

The purpose of the following shall be to renew the paint systems in the compartments on the ferryboats by use of one of the systems listed below. The system used will be determined and approved by a TxDOT representative depending on the degree of abrasion which has occurred between dry dockings. The two systems designated are:

"A" SYSTEM – ABOVE DECK PLATES OR OUTBOARD OF THE 10 FOOT 6 INCH GIRDER

"B" SYSTEM – BELOW DECK PLATES OR INBOARD OF THE 10 FOOT 6 INCH GIRDER

- 8.1. "A" SYSTEM – ABOVE DECK PLATES OR OUTBOARD OF THE 10 FOOT 6 INCH GIRDER: Shall be performed as follows:
  - 8.1.1. Surface Preparation: Sandblast entire surface area to achieve SSPC-SP 10 standard.
  - 8.1.2. Coating Application
    - 8.1.2.1. Apply one full coat of red, surface tolerant epoxy at 7.0 wet mils for a dry film thickness of 5.0 mils.

- 8.1.2.2. Apply one stripe coat of red, surface tolerant epoxy primer by brush to backs of all angles, cut-outs, weld seams or any other area the painter would have difficulty in applying full coating thickness.
  - 8.1.2.3. Apply one full coat of white, surface tolerant epoxy at 7.0 wet mils for a dry film thickness 5.0 mils.
  - 8.1.2.4. Apply one full coat of white, polyurethane epoxy finish at 4.0 wet mils for a dry film thickness of 2.0 mils.
  - 8.1.2.5. Apply one stripe coat of white, polyurethane epoxy finish by brush to backs of all angles, cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.
- 8.2. "B" SYSTEM – BELOW DECK PLATES OR INBOARD OF THE 10 FOOT 6 INCH GIRDER shall be performed as follows:
- 8.2.1. Surface Preparation: Sandblast entire surface area to achieve SSPC-SP 10 standard.
  - 8.2.2. Coating Application
    - 8.2.2.1. Apply one full coat of light gray, surface tolerant epoxy at 8.2 wet mils for a dry film thickness of 6.0 mils.
    - 8.2.2.2. Apply one stripe coat of light gray, surface tolerant epoxy by brush to backs of all angles, cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.
    - 8.2.2.3. Apply a full coat of red, surface tolerant epoxy at 8.2 wet mils for a dry film thickness of 6.0 mils.
    - 8.2.2.4. Apply one stripe coat of red, surface tolerant epoxy by brush to backs of all angles, cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.

## 9. ANCHOR AND CABLE

The purpose of the following is to prepare and paint the anchor cable.

### 9.1. ANCHOR

- 9.1.1. Surface Preparation: Sandblast entire surface area to achieve SSPC-SP6 standard.
- 9.1.2. Coating Application
  - 9.1.2.1. Apply one full coat of red, surface tolerant epoxy at 7.0 wet mils for a dry film thickness of 5.0 mils.
  - 9.1.2.2. Apply one stripe coat of light gray, surface tolerant epoxy by brush to backs of all angles, cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.
  - 9.1.2.3. Apply one full coat of gray, surface tolerant epoxy at 7.0 wet mils for a dry film thickness of 5.0 mils.
  - 9.1.2.4. Apply one full coat of white, polyurethane epoxy finish at 4.0 wet mils for a dry film thickness of 2.0 mils.

- 9.1.2.5. Apply one stripe coat of light gray, surface tolerant epoxy by brush to backs of all angles, cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.
- 9.1.2.6. Apply one coat of Polyurethane Finish (color dependent upon trim colors) as recommended by manufacturer.
- 9.1.2.7. Apply second coat of Polyurethane Finish (color dependent upon trim colors) as recommended by manufacturer.

## 9.2. ANCHOR CABLE

- 9.2.1. Surface Preparation: If strands of cable are not visible due to buildup of cable guard coating, clean with degreaser and wire brush or other suitable means. Cable shall be inspected by TxDOT, USCG and ABS representatives.
- 9.2.2. Coating Application: Apply one full coat of Cable Guard PM322 (Manufactured by Oil Center Research, Inc).
  - 9.2.2.1. Caution shall be taken during coating and after to control Cable Guard damaging painting.

## 10. ANCHOR WINDLASS

The purpose of the following is to prepare and paint the exterior of the anchor windlass.

10.1. SURFACE PREPARATION: Sandblast entire surface area to achieve SSPC-SP 10 standard.

### 10.2. COATING APPLICATION

- 10.2.1. Apply one full coat of zinc-rich epoxy at 5.0 wet mils for a dry film thickness of 3.0 mils.
- 10.2.2. Apply one full coat of light gray, surface tolerant epoxy at 8.2 wet mils for a dry film thickness of 6.0 mils.
- 10.2.3. Apply one full coat of blue, polyurethane epoxy finish at 4.0 wet mils for a dry film thickness of 2.0 mils.

## 11. DAVITS

The purpose of the following is to prepare and paint the exterior of the davits.

11.1. SURFACE PREPARATION: Sandblast entire surface area to achieve SSPC-SP 10 standard. This includes removal of all hardware/brackets and protection of non-blasting areas.

### 11.2. COATING APPLICATION

- 11.2.1. Apply one full coat of zinc-rich epoxy at 5.0 wet mils for a dry film thickness of 3.0 mils.
- 11.2.2. Apply one stripe coat of clear sealer epoxy by brush to backs of all angles, cut-outs, weld seams and any other area the painter would have difficulty in applying full coating thickness.
- 11.2.3. Apply one full coat of light gray, surface tolerant epoxy at 8.2 wet mils for a dry film thickness of 6.0 mils.

- 11.2.4. Apply one full coat of white, polyurethane epoxy finish at 4.0 wet mils for a dry film thickness of 2.0 mils.

## 12. INTERIOR DECK FLOORING: A-60

The purpose of the following is to prepare and paint the interior of the flooring in both wheelhouses and both Energy Storage Spaces with PolySpec® 8K A-60 IMO, A-60 rated deck insulation underlayment and SynDeck IMO Epoxy color flake system.

"A" SYSTEM – RENEW ENTIRE FLOORING SYSTEM

"B" SYSTEM – RENEW SYNDECK IMO EPOXY COLOR FLAKE SYSTEM

"C" SYSTEM – RENEW TOP CLEAR COAT SYNDECK IMO EPOXY COLOR FLAKE SYSTEM

### 12.1. "A" SYSTEM – RENEW ENTIRE FLOORING SYSTEM

#### 12.1.1. SURFACE PREPARATION

- 12.1.1.1. Remove all surface contaminants, such as oil and grease, using chemical cleaner.
- 12.1.1.2. Cut and grind out any existing surface cracks in the present floor system.
- 12.1.1.3. Abrasive power tool clean entire surface to achieve a suitable surface profile and anchor pattern in accordance with the manufacturer's recommendation.
- 12.1.1.4. A visual inspection shall be conducted, and any remaining loose flaking paint shall be removed by hand tool cleaning or whatever means is most cost effective.
- 12.1.1.5. Solvent clean entire area to ensure surface is clean and dry and all contaminants are removed prior to application of coating system.
- 12.1.1.6. When necessary, dehumidifiers or blowers shall be used to keep out all moisture.
- 12.1.1.7. When installing the PolySpec® or SynDeck® systems, the relative humidity shall be no higher than the manufacturer's recommendation.

#### 12.1.2. COATING APPLICATION: Apply coating in accordance with manufacturer's instructions.

- 12.1.2.1. Apply one full coat of PolySpec® TITE M-50 Steel Primer.
- 12.1.2.2. Apply one full coat of PolySpec® 8K A-60 rated deck insulation underlayment at 1-3/4 inch thick.
- 12.1.2.3. Apply one full coat of SynDeck Underlayment Sealer Coat.
- 12.1.2.4. Apply one full coat of SynDeck IMO Epoxy SS5000 (color).
- 12.1.2.5. Apply color flake.
- 12.1.2.6. Apply one full coat of SynDeck IMO Epoxy SS5000 (clear) to entire flooring system.
- 12.1.2.7. Apply one additional full clear coat to entire flooring system.

## 12.2. "B" SYSTEM – RENEW SYNDECK IMO EPOXY COLOR FLAKE SYSTEM

### 12.2.1. SURFACE PREPARATION

- 12.2.1.1. Abrasive power tool floor surface to remove SynDeck IMO Epoxy color flake system
- 12.2.1.2. Repair flooring system as needed to repair damage and gouges smoothing as needed.
- 12.2.1.3. Solvent clean entire area to ensure surface is clean and dry and all contaminants are removed prior to application of coating system.
- 12.2.1.4. When necessary, dehumidifiers or blowers shall be used to keep out all moisture.
- 12.2.1.5. When installing the SynDeck system, the relative humidity shall be no higher than the manufacturer's recommendation.

### 12.2.2. COATING APPLICATION: Apply coating in accordance with manufacturer's instructions.

- 12.2.2.1. Apply full SynDeck IMO Epoxy color flake system.
- 12.2.2.2. Apply one additional full clear coat to entire flooring system.

## 12.3. "C" SYSTEM – RENEW TOP CLEAR COAT SYNDECK IMO EPOXY COLOR FLAKE SYSTEM

### 12.3.1. SURFACE PREPARATION

- 12.3.1.1. Lightly sand and solvent clean entire area to ensure surface is clean and dry and all contaminants are removed prior to application.
- 12.3.1.2. When installing the SynDeck system, the relative humidity shall be no higher than the manufacturer's recommendation.

### 12.3.2. COATING APPLICATION: Apply coating in accordance with manufacturer's instructions.

- 12.3.2.1. Apply one full clear coat to entire flooring system.
- 12.3.2.2. Apply second full clear coat to entire flooring system.

## 13. INTERIOR DECK FLOORING: A-0

The purpose of the following is to prepare and paint the interior of the flooring in the Engineer's Operating Station, Salon, Crew Room, Emergency Generator Room, Wash Room, Passenger Toilets, and Crew Toilet with SynDeck Ultra Lightweight Underlayment and SynDeck IMO Epoxy, A-0 rated color flake system.

"A" SYSTEM – RENEW ENTIRE FLOORING SYSTEM

"B" SYSTEM – RENEW SYNDECK IMO EPOXY COLOR FLAKE SYSTEM

"C" SYSTEM – RENEW TOP CLEAR COAT SYNDECK IMO EPOXY COLOR FLAKE SYSTEM

### 13.1. "A" SYSTEM – RENEW ENTIRE FLOORING SYSTEM

#### 13.1.1. SURFACE PREPARATION

- 13.1.1.1. Remove all surface contaminants, such as oil and grease, using chemical cleaner.
- 13.1.1.2. Cut and grind out any existing surface cracks in the present floor system.
- 13.1.1.3. Abrasive power tool clean entire surface to achieve a suitable surface profile and anchor pattern in accordance with the manufacturer's recommendation.
- 13.1.1.4. A visual inspection shall be conducted, and any remaining loose flaking paint shall be removed by hand tool cleaning or whatever means is most cost effective.
- 13.1.1.5. Solvent clean entire area to ensure surface is clean and dry and all contaminants are removed prior to application of coating system.
- 13.1.1.6. When necessary, dehumidifiers or blowers shall be used to keep out all moisture.
- 13.1.1.7. When installing the SynDeck<sup>®</sup> systems, the relative humidity shall be no higher than the manufacturer's recommendation.
- 13.1.2. COATING APPLICATION: Apply coating in accordance with manufacturer's instructions.
  - 13.1.2.1. Apply one full coat of SynDeck Bond Coat SS1222 Steel Primer.
  - 13.1.2.2. Apply one full coat of SynDeck Ultra Lightweight Underlayment, at a maximum thickness of 1/4 inch.
  - 13.1.2.3. Apply one full coat of SynDeck Underlayment Sealer Coat.
  - 13.1.2.4. Apply one full coat of SynDeck IMO Epoxy SS5000 (color).
  - 13.1.2.5. Apply full color flake.
  - 13.1.2.6. Apply one full coat of SynDeck IMO Epoxy SS5000 (clear) to entire flooring system.
  - 13.1.2.7. Apply one additional full clear coat to entire flooring system.
- 13.2. "B" SYSTEM – RENEW SYNDECK IMO EPOXY COLOR FLAKE SYSTEM
  - 13.2.1. SURFACE PREPARATION
    - 13.2.1.1. Abrasive power tool floor surface to remove SynDeck IMO Epoxy color flake system
    - 13.2.1.2. Repair flooring system as needed to repair damage and gouges smoothing as needed.
    - 13.2.1.3. Solvent clean entire area to ensure surface is clean and dry and all contaminants are removed prior to application of coating system.
    - 13.2.1.4. When necessary, dehumidifiers or blowers shall be used to keep out all moisture.
    - 13.2.1.5. When installing the SynDeck systems, the relative humidity shall be no higher than the manufacturer's recommendation.

- 13.2.2. COATING APPLICATION: Apply coating in accordance with manufacturer's instructions.
  - 13.2.2.1. Apply one full coat of SynDeck IMO Epoxy SS5000 (color).
  - 13.2.2.2. Apply color flake.
  - 13.2.2.3. Apply one full coat of SynDeck IMO Epoxy SS5000 (clear) to entire flooring system.
  - 13.2.2.4. Apply one additional full clear coat to entire flooring system.
- 13.3. "C" SYSTEM – RENEW TOP CLEAR COAT SYNDECK IMO EPOXY COLOR FLAKE SYSTEM
  - 13.3.1. SURFACE PREPARATION
    - 13.3.1.1. Lightly sand and solvent clean entire area to ensure surface is clean and dry and all contaminants are removed prior to application.
    - 13.3.1.2. When installing the SynDeck systems, the relative humidity shall be no higher than the manufacturer's recommendation.
  - 13.3.2. COATING APPLICATION: Apply coating in accordance with manufacturer's instructions.
    - 13.3.2.1. Apply one full coat of SynDeck IMO Epoxy SS5000 (clear) to entire flooring system.
    - 13.3.2.2. Apply second full clear coat to entire flooring system.
- 14. GALVANIZED MATERIALS
  - 14.1. SURFACE PREPARATION: Brush or sand sweep all surface areas only enough to obtain an anchor pattern suitable for top coating.
  - 14.2. COATING APPLICATION
    - 14.2.1. Apply one full coat of gray, surface tolerant epoxy at 7.0 wet mils for a dry film thickness of 5.0 mils.
    - 14.2.2. Apply one full coat of white epoxy finish at 4.0 wet mils for a dry film thickness of 2.0 mils.
- 15. NON-SKID
  - 15.1. SURFACE PREPARATION: Sandblast entire surface area to SSPC-SP 10 standard. All surrounding equipment and superstructure shall be protected from blasting and coating.
  - 15.2. COATING APPLICATION
    - 15.2.1. Apply one full coat of Zinc-Rich epoxy at 5.0 wet mils for a dry film thickness of 3.0 mils.
    - 15.2.2. Apply one full coat of bronze aluminum, surface tolerant epoxy at 9.4 wet mils for a dry film thickness of 6.0 mils.
    - 15.2.3. Apply one full coat of gray non-skid deck epoxy at 14.0 wet mils for a dry film thickness of 10.0 mils.

## 16. MACHINERY, EQUIPMENT, PIPING, AND VENTILATION DUCTS

Items supplied with prime coat only shall be given two finish coats of machinery paint of a color selected by TxDOT.

Items provided with finished manufacturer's coating shall receive one additional coat of the manufacturer's color upon completion of construction prior to delivery.

All vent duct, piping, and pipe covering shall be painted similar to compartments below the main deck.

Priming or painting of concealed galvanized duct work or piping is not required.

## 17. OIL TANKS

Interior surfaces of oil tanks shall be prepared as follows:

- Remove all weld splatter, smooth all weld seams, and sharp edges.
- Clean by suitable means such as pressure wash or scrubbing and solvent wipe at the discretion of the Contractor and to the satisfaction of the Owner's Representative.
- Prepare all welds and disrupted areas by abrasive blasting to SSPC SP-10.
- Clean and vacuum to remove all dust, grit, and contaminants.
- Immediately after preparation, wipe down or spray tanks with a suitable oil to protect surfaces from rust bloom.

## 18. COATING MATERIALS

The coatings materials listed below are the current TxDOT approved coatings used throughout the ferryboats. The respondent shall submit the response using the following materials or a TxDOT approved equivalent (Ref. Para. 2.1).

- 18.1. Intertuf KHA303/KHA062 Red Epoxy.
- 18.2. Intertuf KHA302/KHA062 Gray Epoxy.
- 18.3. Intertuf KHA304/KHA062 Black Epoxy.
- 18.4. Interclene BRA572 Black Antifouling.
- 18.5. Interclene BRA570 Red Antifouling.
- 18.6. Interthane PHB000/PHA046 White Polyurethane Finish.
- 18.7. Interthane PHR807/PHA046 Dark Gray Polyurethane Finish.
- 18.8. Interthane PHY999/PHA046 Black Polyurethane Finish.
- 18.9. Interthane PHC935/PHA046 Blue Polyurethane Finish.
- 18.10. Interthane 990 Polyurethane Finish (Trim work, color varies).
- 18.11. Interbond 600 EPA439 EPA440 Clear Epoxy Sealer.
- 18.12. Interzinc EPA075V/EPA076V Zinc-Rich Epoxy.
- 18.13. Intershield 300V ENA310/ENA313 Bronze Aluminum Epoxy.

- 18.14. Intergard EK5040H/EBA744 Non-Skid Dk Gray Deck Epoxy.
- 18.15. Cable Guard PM322.
- 18.16. Intergard KBA400/KBA403 Buff Tar Free Epoxy (non-potable water tanks).
- 18.17. Intergard KBA401/KBA403 Off-White Tar Free Epoxy (non-potable water tanks).
- 18.18. Intershield 6GV EGA650/EGA651 High Solids Epoxy Non-Skid Deck Coating.

## 633 CATHODIC PROTECTION

The Contractor is responsible to protect the vessel from marine growth and currents until delivery. A cathodic protection system consisting of aluminum anodes shall be provided for 2-year protection assuming 50% bare steel. Aluminum anodes shall conform to MIL-DTL-24779.

- a) Install four (4) total aluminum anodes 6 inch x 12 inch x 1-1/4 inch thick, two (2) in each sea chest, to prevent electrolytic action in chests and surrounding areas.
- b) Install twenty (20) total aluminum anodes 6 inch x 12 inch x 1-1/4 inch thick between the blades of the propulsion units, ten (10) at each propulsion unit as shown in Reference (MMM).
- c) Install one hundred and twenty (120) aluminum anodes 6 inch x 12 inch x 1-1/4 inch thick along the underwater hull structure, sixty (60) port and sixty (60) starboard, as directed by Reference (MMM).
- d) All aluminum anodes are to be secured by steel welding straps. No paint is to be applied to the aluminum anodes or overspray left thereon.

## 634 DECK COVERING

### 634.1 GENERAL

Before applying any deck coverings, the decks shall be thoroughly cleaned free of all rust, scale, grease, oil, and other extraneous matter to bare metal. All uneven spaces shall be filled with approved underlay as specified herein.

All deck coverings shall be thoroughly cleaned after finishing and then treated as recommended by the deck covering manufacturer and approved by TxDOT. Thereafter, the covering shall be thoroughly and completely covered so as to protect the covering from wear and dirt prior to delivery of the ship.

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

Colors and patterns of all deck coverings shall be as selected by TxDOT.

### 634.2 FLOOR UNDERLAY

Floor underlay shall be laid in strict accordance with the manufacturer's instructions. The finished surface shall be troweled smooth and level.

### 634.3 FLOOR OVERLAY

Floor overlay shall be laid in strict accordance with the manufacturer's instructions. The finished surface shall be troweled smooth and level.

### 634.4 EPOXY FLOORING

Syndeck IMO Epoxy color flake flooring system shall be installed as the final color flake system for all epoxy flooring as approved by TxDOT. For A-0 rated decks including the Salon, Salon Restrooms, Crew Room, Head, and Closet, Janitorial Closet, Electrical Rooms, EOS, and the Emergency Generator Room, SynDeck Ultra Lightweight Underlayment shall be installed. For A-60 rated decks, including both Pilohouses and both Energy Storage Spaces ("A End" and "B End"), PolySpec 8K A-60 shall be installed as underlayment. See Section 631.3 for additional coating specifications. Epoxy flooring shall be bonded to the structural deck according to the vendor's requirements with adhesive, suitably grouted and fitted with a 4 inch ceramic cove around all boundaries.

All epoxy flooring shall be laid on an underlayment in strict accordance with the manufacturer's instructions, troweled smooth, and sloped toward drains. Application thickness shall take into consideration the rated fire boundary of the deck being covered. Epoxy flooring shall not compromise the opening of deck hatches, where present.

### 634.5 DECK COVERING SCHEDULE

- a) Engine Room
  - Engineer's Observation Station Underlay, Overlay, Flooring: Syndeck IMO Epoxy with Insulated rubber mat in front of switchboards.
- b) Energy Storage Spaces "A End" and "B End"
  - Underlay, Overlay, Flooring: Polyspec 8K A-60 underlayment with Syndeck IMO Epoxy color flake
- c) Main Deck
  - Lockers & Storerooms: Paint
  - Novec 1230 Enclosure: Paint
  - Passenger Stairway ladders & Landings: Non-Skid
  - Crew Ladders & Landings: Non-Skid Paint
  - Engine room Entrance: Non-Skid Selby
  - Vehicle Space: Non-skid
- d) Upper Decks
  - Pilot House landing: Underlay, Overlay, Flooring
  - Crew Room: Underlay, Overlay, Flooring: Syndeck IMO Epoxy
  - Passenger Cabin: Underlay, Overlay, Flooring Syndeck IMO Epoxy
  - Toilets: Underlay, Syndeck IMO Epoxy
  - Stairway Enclosures Underlay, Overlay, Flooring
  - Weather Decks Non-Skid
  - Crew Toilet Underlay, Syndeck IMO Epoxy
  - Emergency Generator Room Deck Paint, Insulated rubber mat in front of switchboard, flooring Syndeck IMO Epoxy
- e) Bridge Deck
  - Bridge Deck Non-Skid coating

Wheel House Underlay, Overlay, Flooring: Polyspec 8K A-60 underlayment with Syndeck IMO Epoxy color flake

f) Roof

Pilot House Tops Non-Skid coating

## 635 THERMAL INSULATION & LININGS

### 635.1 GENERAL

Insulation and linings shall be in accordance with References (CCC) and (NNN). All materials of construction are to be incombustible, meeting USCG requirements. Thermal insulation shall be installed with suitable welded stud pins and speed clips. After installation, the insulation shall have the same density as the original batts or blankets.

Prior to the application of insulation or linings, the surfaces to be covered shall have been treated and coated as specified elsewhere.

All insulation prone to damage shall be lagged with stainless steel or aluminum sheet metal over insulation and vapor barrier.

### 635.2 THERMAL INSULATION

Thermal insulation shall be installed according to Reference (NNN). In general, thermal insulation shall be installed behind solid joiner bulkhead panels and joiner ceiling panels in the Salon, Salon Restrooms, Crew Room, Crew Head, Crew Storage/Equipment Room, Electrical Storage Room, Emergency Generator Room, each Pilot House and the EOS bulkheads and overhead where the adjacent space is not air conditioned. The Exhaust stack should be insulated up to the Bridge Deck level. All material shall be USCG approved incombustible fiber-glass bats. The type of insulation installed should be in accordance with Reference (NNN). Type 112 shall have 1-inch-thick wrap around beams and stiffeners. All perimeter bulkheads including the floor and overhead of the EOS shall have 4-inch-thick A-60 insulation. Thermal insulation flooring shall also be installed as described in Section 634.

The insulation schedule is shown in the table in Reference (NNN).

### 635.3 FIRE INSULATION

Interior bulkheads and deck shall be insulated as necessary to meet the USCG requirements for structural fire protection. Both pilothouses and both ESS ("A End" and "B End") shall have A-60 insulation with A-60 epoxy flooring installed per sections 631 and 634. As there are various combinations of insulation and lining which meet the class required, the Contractor may use his/her standard practice in developing the details and submit them to TxDOT and the USCG for approval. The minimum insulation thickness shall be 3 inches for thermal insulation and 4 inches for A-60 fire insulation. Fire zone insulation shall be installed in accordance with manufacturer's guidelines. The insulation shall be in accordance with Reference (CCC).

The Contractor shall take the SFP 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 of the SFP without compression of or gaps in the material.

### 635.4 ACOUSTIC INSULATION

Acoustic insulation, if required, shall be applied across the faces of plating to meet the noise goals stated in Section 073. As there are various combinations and types of USCG approved material available, the Contractor may use his/her standard practice in developing the details to meet the noise limits. However, the Contractor shall submit them to TxDOT for approval prior to submission to the USCG for approval. Fire and thermal insulation can double as acoustic insulation if appropriate. The spaces to be acoustically insulated in addition to thermal insulation include the trunks passing through the Salon and the EOS. The insulation shall be of suitable thickness and configuration to obtain the noise limits listed in Section 073 with all machinery in operation.

### 635.5 LININGS & CEILINGS

All insulated bulkheads shall be covered with liner panels. All liner panels shall use 316 stainless steel joiner and terminations. In addition, the joiner bulkheads on the inside and outside of the Salon Restrooms, and the walls and ceilings of the Salon, Crew Room, Head and Closet, Pilotheouses, Janitor's Closet, Emergency Generator Room, Electrical Equipment Room, Energy Storage Spaces, and Engineer's Observation Station shall be lined with 316 stainless steel perforated sheathing, as shown in Reference (NNN). All insulated decks shall be provided with ceilings with a clear height of 7 foot – 6 inches in the pilot houses and 7 foot – 7 inches in the Salon Passenger area and Crew Room. Ceiling shall be installed such that any panel can be removed without removing adjacent panels. Ceiling panels shall be suspended from overhead beams and structure with suitable furring and hanging devices and in accordance with manufacturer's guidelines.

Floor systems are described in Section 634.

Lining shall be detachable panels, removable without removal of adjacent panels. Lining shall be installed in accordance with manufacturer's guidelines. Color and texture shall be selected by TxDOT. Base boards, approved by TxDOT, shall be provided. Twelve (12) hinged panels shall be provided for access and maintenance of concealed valves dampers and other equipment mounted in the overhead, etc., as directed by TxDOT.

### 635.6 EOS -LININGS, CEILING AND DECK

The Contractor shall install a TNF "Quiet" interior in the EOS. The color samples shall be provided of lining, ceiling tile and trim for TxDOT approval. Window casings shall be of 316 stainless, steel, except as otherwise noted. Bulkheads shall have stainless steel perforated sheathing on top of the 4 inch A-60 insulation. For spaces insulated but not lined, all seams of insulation shall be covered with glass cloth and tape so as to present a smooth surface. Coat exposed surface with waterproof vapor barrier sealer, after installation and before painting.

Stainless steel perforated sheathing with 3/16 inch holes shall be used to conceal insulation in the overhead of the Engine Room, Engineer's Observation Station, Energy Storage Spaces, and VSP rooms. Sheathing shall be installed against an approved system of coated metal furring with stainless steel screw fastenings. All insulation behind sheathing shall be taped and coated with a water proof vapor-barrier sealer after installation.

## 641 FINISHED SPACES

### 641.1 GENERAL

All furniture and furnishings necessary for the complete outfit of the vessel shall be provided in accordance with USCG regulations. Furniture for the Crew Space and EOS shall be of rugged, heavy duty construction and shall be permanently secured to the deck except for the chairs. Two (2) bench seats shall be fabricated and installed in the Salon as shown on the ABS Reviewed Drawings.

### 641.2 PILOT HOUSES

Each pilot house shall be provided with the equipment indicated on the ABS Reviewed Drawings and in these Specifications.

Each Pilot House shall be fitted with two control consoles arranged port and starboard around the centerline sliding helm chair track. The consoles shall be fabricated of steel coated for corrosion protection. The consoles shall feature latching doors or removable panels allowing maximized access to the interiors.

The console tops shall be constructed in a manner which will facilitate equipment upgrades throughout the lifecycle of the vessel. The primary console structure shall feature a flange approximately four inches wide around the perimeter of the horizontal surface and at intervals along its length; i.e., the console top shall mostly consist of large holes. Over the holes, install aluminum plates into which the console controls and instruments are mounted. Attach the aluminum plates to the console structure with threaded fasteners only. The intent is for the aluminum plates to be removed and replaced when control upgrades are performed. Also see Section 400 for details regarding control, display, and instrument arrangements.

The Contractor shall develop a full-scale plywood or foam core board mockup of the console for TxDOT's approval prior to final console fabrication. It is recommended that the Contractor discuss console configuration and arrangements with the Owner prior to design and construction of the mockup, using Reference (B) as guidance. The mockup shall include actual size paper or foam images of, or the actual instruments and controls, to be positioned in the console. The propulsion and steering controls are of particular importance. The mockup shall address the controls and instruments described here and elsewhere in this Specification and shall verify unimpeded access to these components. Final console configuration and arrangement and equipment selection shall be approved by TxDOT.

The sides of the consoles shall be finished with wood veneer; samples of veneers shall be submitted to TxDOT for approval prior to fabrication. The console tops shall have a matte black finish. All edges shall be filed or ground smooth or finished with oak trim pieces. The top surfaces of the consoles shall be approximately 42 inches above the finished deck. The consoles shall include a 3-inch toe kick on the exposed lower edges.

The interior of the console shall remain sufficiently open and free of barriers to permit the passage of ventilating air through and around all internal components. Provide and install inlet louvers low on the console and console doors as necessary for adequate ventilation. The Contractor shall provide and install air exhaust fans within the Pilot House consoles to ensure satisfactory air circulation throughout the length of the console, and air exchange with the Pilot House ambient air. The exhaust fan shall draw

its suction from near the top of the interior of the console. All fans shall act as exhaust fans. The Contractor shall ensure adequate ventilation is provided to prevent overheating of equipment.

Provide and install overhead consoles suspended from the overhead above the main Pilot House consoles. Their construction methodology shall match that of the deck mounted Pilot House consoles.

Three (3) pilot chairs per pilothouse, six (6) total, shall be provided. For each Pilot House, one H.O. Bostrom SeaPost Sierra Pilot chair shall be installed on a sliding track mount. The track shall allow positioning of the chair at any longitudinal point between the control consoles and shall allow the helm person to step away from the chair at the midship end of its travel without interfering with the consoles. The other two chairs in each Pilot House shall be H.O. Bostrom Sierra Crew chairs on fixed pedestal mounts located toward midship from the ends of the consoles. The seats shall swivel on the pedestals and the pedestals shall feature adjustable foot rests. Height shall be appropriate to offer a line of sight out the end facing Pilot House windows.

Counters approximately six feet long shall be fitted along each side of each Pilot House below the windows. The counters shall have a dark matte surface finish, oak trim, and reinforcing brackets below.

The "B End" Pilot House shall be equipped with a steel security cabinet with cypher lock. The cabinet shall measure approximately 24 inches x 24 inches x 30 inches tall and shall be located below the counter on the port side.

The consoles, chairs, and security cabinet shall be mounted to the deck by welding or bolted foundation in a manner congruous with the flooring and structural fire protection scheme.

One (1) commercial type first-aid kit per Pilot House, two (2) total, shall be provided and affixed to the bulkhead as directed by TxDOT.

### 641.3 SALON

The Salon shall be provided with the following:

- a) Bench seats as indicated on the ABS Reviewed Drawings.
- b) No Smoking signs.
- c) Two (2) framed and glazed required poster display cases, i.e., Instruction for using life preservers, Persons allowed in Pilot House, etc.

### 641.4 CREW SPACE

The crew room shall be fitted with the following:

- a) Four (4) metal chairs with upholstered seats and backs
- b) One (1) Formica covered table
- c) Mounted Gai-Tronics phone
- d) Mounted sound powered phone
- e) One (1) cork bulletin board
- f) One (1) Microwave oven
- g) One (1) Refrigerator
- h) The janitorial closet shall be fitted with a cleaning gear locker as shown on the Plan, including:

- i) Deep sink
- j) Six (6) shelves

#### 641.6 ENGINEER'S OBSERVATION STATION (EOS)

The engineer's observation station shall be provided with the following:

- a) One (1) bulkhead mounted desk with drawer and laminated top
- b) Two (2) metal chairs, upholstered seats and backs
- c) One (1) four drawer letter size file
- d) One (1) Microwave Oven
- e) One (1) Refrigerator
- f) Sound powered telephone
- g) General Alarm Bell
- h) One (1) trash can
- i) Gai-Tronics, bulkhead mounted phone
- j) Bulkhead mounted desk light
- k) Two (2) coat hooks
- l) One (1) commercial type First-Aid Kit
- m) EOS control console, fabricated in accordance with Reference (E). Construction details shall match those of section 641.2 for the Pilot House consoles.

#### 641.9 JOINER WORK

The joiner work shall conceal structure, piping, wiring, ventilating ducts, etc., in passenger space, toilet spaces, crew room, and EOS.

#### 641.10 MATERIALS

TxDOT shall furnish and Contractor shall install decorations and pictures, if required.

#### 641.11 DECORATOR SCHEMES

Contractor shall furnish proposed colors, patterns, and texture samples of material for TxDOT approval.

### 644 SANITARY SPACES

#### 644.1 GENERAL

The sanitary system shall consist of a closed drain system to a sewage holding tank, a sewage discharge pump, and a discharge connection at the main deck. The system shall meet all the requirements of the EPA and other regulatory bodies. The sewage holding tank shall be an independent tank of approximately 6,000 gallons capacity located per the Plans.

#### 644.2 TOILETS

The vessel shall have four (4) Women's, three (3) Men's, one (1) Crew's and one (1) ADA toilets. Requirements for the ADA head are detailed in Section 528.1.

Crew's toilet shall be fitted with the following:

- a) One (1) stainless steel siphon jet elongated rim, with Sloan "Royal" flush valve and black, open front seats with check hinge
- b) One (1) coat hook
- c) One (1) toilet paper dispenser
- d) One (1) sink
- e) One (1) electric hand dryer

Women's toilets shall each be fitted with the following:

- a) One (1) stainless steel siphon jet elongated rim, with Sloan "Royal" flush valve and black, open front seats with check hinge
- b) One (1) coat hook
- c) One (1) toilet paper dispenser
- d) One (1) sink
- e) One (1) electric hand dryer
- f) At least one (1) women's toilet shall have one (1) wall-mounted sharps container and one (1) wall-mounted baby changing station

Men's toilets shall each be fitted with the following:

- a) One (1) stainless steel siphon jet elongated rim, with Sloan "Royal" flush valve and black, open front seats with check hinge
- b) One (1) coat hook
- c) One (1) toilet paper dispenser
- d) One (1) stainless steel siphon jet, with Sloan "Royal" flush valve
- e) One (1) sink
- f) One (1) electric hand dryer
- g) At least one (1) men's toilet shall have one (1) wall-mounted sharps container and one (1) wall-mounted baby changing station

Certain outfitting equipment listed in this section has been specified by TxDOT:

- Toilet Paper Dispenser shall be "Tough Guy" part number 1ECJ9 and shall be in satin steel and designed to hold two rolls.
- Hand dryer shall be "Extreme Air" part number EXT2-M hand dryer in satin steel. This hand dryer unit shall weigh no more than 10 lbs and must provide an air velocity of 16,000 linear feet per minute.
- Urinals shall be "American Standard" Maybrook Universal Washout Urinal made of vitreous china, part number 6581.001 TOP SPUD.
- Water closet shall be "Kohler" Wellcomme Elongated Toilet Bowl made of vitreous china, part number K-96053. Dimensions shall be 14-7/8" wide by 15" tall and 28-1/4" long.
- Sink shall be "Barclay" Tina Basin made of vitreous china, part number 4-551. The dimensions shall be no larger than 12" by 6" and not deeper than 5.25".

- Deep sink shall be "Griffin" mop sink with 23" by 23" overall dimensions part number UM-220. The sink shall be 304 16-gauge stainless steel and weigh no more than 41 pounds.
- All water faucets shall be Chicago Faucets part # WWG333-665PSHABCP

Any substitute for the preceding lists must meet the critical dimensions and parameters of each item and must be approved by TxDOT before acquisition.

### 644.3 SINKS

Sinks shall be 316 SS, 20-inch by 14-inch wall hug with backsplash and shall drain to sewage tank. A heavy duty stainless steel deep sink shall be installed in the engine room and drain to the bilge. A deep stainless steel sink shall be installed with hot and cold water in the crew's room area and drain to the sewage tank.

## 665 WORKSHOPS

### 665.1 WORK BENCH

A heavy duty steel work bench approximately 7 feet long shall be provided in accordance with the ABS Reviewed Drawings and fitted with three (3) drawers under and a heavy tool board over and a 12 gauge sheet metal shelf beneath turned up approximately 1 inch on all four sides. The bench shall be fitted with a heavy duty 6 inch machinist's vise.

### 665.2 OTHER EQUIPMENT

Provide one (1) 8 foot, one (1) 6 foot, and one (1) 4 foot Type 1A fiberglass step ladders, including suitable stainless steel round bar brackets to store ladders in a vertical position from the bulkhead. Provide two (2) hazardous material containers, foot operated, with spring loaded top; one for spent oil cans and one for oily rags. Provide two (2) mop bucket/wringer combos and two (2) heavy duty mops.

Provide four (4) floor signs "CAUTION- WET FLOOR".

## 671 MISCELLANEOUS STOWAGE

### 671.1 GENERAL

Bins, racks, shelves, etc., shall be furnished and arranged to suit the material and equipment to be stowed and will be fitted in all spaces normally requiring shelving, i.e., Engine Room, Emergency Generator Room, janitorial closet, etc.

### 671.2 STOWAGE SPACES

Suitable boxes and lockers secured for stowage of deck gear, life jackets, etc., shall be provided. Ropes shall be stored in the rope locker on the main deck and the storage space shall be outfitted with rope hooks.

Provide an additional 20 feet of 1/2 inch steel shelving with 2 inch lip in various locations as directed by TxDOT. Engine Room workbench shall be fitted with a 10-gauge galvanized shelf under the workbench.

Provide two (2) Engine Room safety storage cabinets as directed by TxDOT.

Located inside both of the fenced in rescue boat areas at each end of the vessel shall be a T-handle locker and a life preserver locker. These lockers are shown in detail in Reference (WW) and shall be constructed of 316 Stainless Steel. There shall be two of these T-handle lockers also located at the bottom of each stairway into the engine room, secured to the safety rails. Both of these lockers will also have their cover removed for ease of access. Preliminary locations of these two lockers shall be reviewed and determined by TxDOT or their representatives.

## GROUP 800 – ENGINEERING

### 810 ENGINEERING & WORKING DRAWINGS, CALCULATIONS, AND REVIEW

The Contractor shall utilize out-of-house naval architects to provide all engineering services necessary to confirm engineering work in accordance with the Specification. Services shall include technical calculations, surveys, material selection, preparation of diagrams, sketches, schedules, data, and preparation of all working drawings and as-built drawings. Final As-Built drawings shall be stamped by American Bureau of Shipping (ABS) and the Engineer. These Naval Architects shall be reviewed and approved by TxDOT before any construction assistance or inspections. If multiple Naval Architects are utilized, one shall be designated lead, or primary, with all others reporting to the lead or primary.

#### 810.1 CONTRACTOR DRAWINGS

All drawings shall be produced using Computer Aided Design (CAD) in AutoCAD 2015 or most current format and PDF format. Drawings shall be complete in all detail, serve to gain regulatory approval, and facilitate future use by TxDOT for maintenance and repair activity.

The Contractor shall submit a full sample drawing format showing a typical sheet one and sheet two, including title block, reference, general notes, and revision table format to the TxDOT Representative for approval.

The Contractor shall provide all detail working drawings necessary for the construction of the ferry to suit their own construction methods. It should be noted that all system drawings are schematic and generally show where systems may be run. The Contractor shall be required to develop the details of the systems and how they are to be run.

Any changes to work shown in the Contract Drawings or in the Specifications shall not be made without written approval from TxDOT. The Contract Drawings show acceptable arrangements and features to provide guidance to the Contractor in the development of additional details required for construction and for regulatory agency and TxDOT approvals.

Any errors found in the Contract plans or ABS Reviewed Drawings shall be corrected on detailed drawings, but failure to discover errors will not relieve the Contractor from responsibility for the satisfactory installation and operation, and any incorrect work resulting there from shall be corrected without additional cost.

Prints of all arrangements, structural, piping, electrical, plans, and other documentation required for approval shall be submitted to the applicable Regulatory Bodies, representatives of TxDOT, and the Architect for approval before work commences. Any additions and corrections required by TxDOT, in keeping with these Specifications, shall be made by the Contractor. After revision, submission will be repeated and further revisions incorporated, if required, until final approval is obtained.

The TxDOT Representative will review the Contractor's detailed design to determine compliance with the Plans, Specification and Contract. TxDOT review will not relieve the Contractor of responsibility for deviations from the Specification unless he/she has, in writing, called attention to the deviation at the time of drawing submittal. Approval of a drawing does not constitute approval of a deviation, mistake,

or omission. TxDOT approval of a deviation from the Specification will not relieve the Contractor of the responsibility for satisfactory installation and operation of the system or equipment.

The Contractor shall submit the drawings, documents, and engineering calculations to the TxDOT Representative, in a timely fashion, according to the approved Master Construction Schedule and the Plan Schedule. When submitting system design drawings, such as piping diagrams and isometric wiring diagrams, include the calculations by which the system components were sized. TxDOT will not review these drawings without supporting calculations. Contractor shall develop supporting calculations and documents independently of the TxDOT contract design package Supporting Documents. TxDOT Supporting Documents may be provided at an appropriate time to enable comparison and development of the Contractor's detailed design, at TxDOT's discretion.

TxDOT will normally respond to submittals not later than fourteen (14) calendar days after receipt of the document, with "approved", "conditionally approved subject to comments", or "returned for revision and re-submittal" action. TxDOT review responses shall be via mail/fax or email.

Any item submitted to TxDOT in accordance with the above shall be considered approved if their written approval action is not received by the Contractor within a period of two weeks after submittal. Any work undertaken by the Contractor in advance of approval shall be at the Contractor's risk.

Booklets of details and calculations may be on sheets 11 x 17 in or 8 1/2 x 11 in. Symbols on drawings shall conform to recognized marine commercial standards. Materials shown on drawings shall have item numbers and be identified in a material list by material specifications, ASTM, ANSI, NEMA, etc., as appropriate.

Each drawing shall contain a view showing the entire system covered by the drawing. If the two ends of the vessel are substantially similar, one end may be indicated as such, and not shown specifically on the system plan. All drawings shall be initialed in the title block by the drafter and the engineer responsible for the design prior to submittal to the TxDOT Representative. They shall be signed by the engineer and supervising engineer checking the drawing.

Each drawing shall be checked and finished before submitting to the TxDOT Representative. Drawings without appropriate signatures and drawings which are not complete, will not be reviewed by TxDOT and will be returned to the Contractor for completion. Returned drawing submittals do not count towards fulfilling the Contractor's obligations regarding schedule, i.e., all returned drawings must be resubmitted complete within the scheduled time.

Furnish a copy of all written or email correspondence sent to or received from regulatory agencies to the TxDOT Representative.

The Contractor shall furnish two paper copies and one electronic file copy of each drawing matching the letting drawing list, document, or calculation when submitted to the TxDOT Representative for approval. The Contractor shall use a transmittal form for each submittal giving the drawing number, revision letter, title, date submitted, and spaces for TxDOT to enter the return date, approval action, comments, reviewer's name, and the signature of the TxDOT Representative. Drawings for submittal shall be complete in all respects with all material and equipment shown and shall be accompanied by supporting calculations.

Bills of material and requisitions for all items purchased by the Contractor shall be submitted to TxDOT in duplicate, for approval and revisions, as required.

## 810.2 REGULATORY PROCEDURES AND ANALYSIS

The Contractor or its subcontractors shall develop and obtain regulatory approval for the following documents. The Contractor shall also submit these documents to TxDOT for review and comment. These documents shall be created, as applicable, for all systems aboard the vessel. The documents shall be developed in accordance with Regulatory requirements, as applicable, for steering systems, propulsion systems, Power Management System, Integrated Automation System, control and monitoring systems, and power generation and distribution systems.

USCG Qualitative Failure Mode Evaluation & Analysis (QFMEA): Examines the results of the failure of each control, alarm, and instrumentation system component, and verifies that a single non-concurrent failure will not prevent sustained or restored operation.

USCG Design Verification Test Procedures (DVTP): A detailed test procedure to verify each failure mode identified by the QFMEA.

USCG Periodic Safety Test Procedures (PSTP): Test procedures to periodically verify the proper function of vital system automation, alarm, and control systems.

Overcurrent protective device coordination study: A comparison of the time and current relationships of each series set of protective devices, to verify selective tripping of circuit breakers and fuses.

Harmonic Study: To predict the harmonic content and total harmonic distortion of the AC waveform at the main propulsion bus, propulsion motors, and ship service bus. The predictive study shall be followed by testing and verification during commissioning and sea trials.

Short circuit and device evaluation, bus bracing study.

Voltage drop calculations: To determine required conductor sizes and voltage drops of AC and DC circuits, using final load values and cable lengths.

The approved documents shall be provided to TxDOT with approval letters and shall be provided in electronic format as Word or Excel files.

## 810.3 AS-BUILT DRAWINGS

Update all working drawings to conform to an "as-built" condition and stamp "AS-BUILT FINAL" in the title block. The final drawings shall reflect the systems and arrangements as finally completed and approved.

Final as-built drawings shall include all original letting document drawings, Subcontractor drawings, and any drawing modifications.

Within forty-five (45) calendar days after delivery of the vessel to TxDOT, the Contractor shall deliver six prints of each "AS-BUILT FINAL" drawing (refer to section 086 for sizes), and three (3) sets of USB drives with all electronic files in both AutoCAD 2015 .dwg and Adobe .pdf format to the TxDOT Representative.

### 810.4 MAINTENANCE SCHEDULES

The Contractor shall develop and provide a consolidated maintenance schedule for all machinery and systems on board. The maintenance schedule shall be provided as an Excel spreadsheet. It shall include all maintenance requirements for the systems and machinery for daily maintenance to 5-year maintenance intervals (or 15,000 hours). Each individual maintenance task shall be entered as a separate record (or row if in Excel format). Where possible the maintenance task will reference the location of the manufacturer's manual where the instructions for completion of the maintenance task are described (see Instruction Books described elsewhere in this section of the Specification). The maintenance schedules shall include comprehensive nameplate data for all installed machinery.

The consolidated maintenance schedule shall be provided to the TxDOT Representative as a printed book and in electronic file format.

### 810.5 VENDOR SYSTEM DIAGRAMS

All vendor supplied piping, HVAC, and electrical systems are to include system drawings and diagrams providing ship specific system configurations. Mechanical drawings shall include material schedules, and electrical diagrams shall include the cable type and unique designations for each cable and connection point. For systems distributed across multiple compartments or spaces, the drawings shall show equipment locations and interconnecting components laid over a vessel arrangement. The drawings and diagrams shall include a bill of materials listing all equipment and components; bills of materials shall include manufacturers and part numbers for each item.

Deliver six (6) prints [one (1) copy to be ABS stamped, three (3) copies 11x17 and three (3) copies 22x34] and one (1) electronic copy of all vendor drawings and literature to TxDOT not later than the date the equipment is delivered to the Contractor's facilities. Electronic copies of all vendor drawings shall be in PDF and DWG format.

As-built versions of these diagrams shall be provided by the Contractor prior to sea-trials for review by TxDOT.

### 810.6 DISPLAY DRAWINGS FOR MOUNTING ONBOARD

The Contractor shall develop and provide the following reduced size, non-fading positive prints of drawings to be mounted in the locations noted on board the vessel. These drawings shall be mounted prior to delivery of the vessel to TxDOT. Mount all drawings in anodized aluminum, or stainless steel frames with clear plastic covers, or in tubes as listed below. The tube-mounted drawings shall be completely enclosed in clear plastic.

The set of prints shall include:

<u>Qty.</u>	<u>Description</u>
4	A Contractor-developed, single page Fire and Safety Plan, 11x17 in size. One laminated copy shall be located in the passenger area as directed by TxDOT. Three laminated copies shall be provided in each Pilot House and Engine Room in document tubes. The orientation shall be mirrored based upon the location of the plan and to the orientation of the reader. The plan shall be updated from Reference (BBB) to reflect the as-built condition of the vessel.

- 1 AC/DC electric power distribution system, one-line wiring diagram mounted near the ship service switchboard. AC/DC electric propulsion power system, one-line wiring diagram mounted near the propulsion switchboard.
- 2 Bilge system piping diagrams with operating instructions mounted near each bilge manifold.
- 5 NOVEC 1230 system diagrams and operating instructions to be mounted near each NOVEC 1230 local release station.

Additionally, the Contractor shall provide and place on board all plans and documents required by regulatory agencies. Prior to delivery, obtain a Stability Letter in accordance with 46 CFR 170.120. Mount two copies of the stability letter under glass in a suitable anodized aluminum frame, one in each Pilot House. The final locations of all mounted plans shall be subject to approval by TxDOT's Representative.

### 810.7 DOCKING PLAN

The Contractor shall update Reference (MMM) to reflect the as-built vessel condition which will be used by TxDOT when dry-docking the vessel. This plan shall show the required keel block heights and minimum contact areas, cross sections of the hull for building bilge blocks, locations of all propellers, rudders, drain plugs, sea chests, anodes, over boards, and through-hull appurtenances such as depth transducer. The locations of all items shall be with dimensions to physical common reference points. Vessel particulars such as major dimensions, tank capacities, draft, and lightship weight shall also be provided on the Docking Plan. Locational references shall be shown on the Docking Plan that corresponds to the underwater hull markings. Where anodes are shown, they shall be identified by type and size. The plan shall be submitted to TxDOT for approval.

### 810.8 TANK SOUNDING TABLES

The Contractor shall prepare and furnish tank sounding tables for all tanks within the vessel. Additional tables for any tanks not listed shall be per the guidance of TxDOT. The tables shall show ACTUAL gallons in each tank for each inch of depth of innage and ullage AS MEASURED IN THE SOUNDING TUBE FOR THAT TANK, if present. The Contractor shall deliver these tables to the vessel prior to sea trials.

## 833 WEIGHT ESTIMATE

Within 30 calendar days after date of Contract award, the Contractor shall submit for approval an independently prepared estimate of light ship weight and centers of gravity. This estimate shall describe the weight and centers of gravity of the ship in comprehensive detail. The estimate shall be done in SWBS format to facilitate comparison with the Contract Design weight estimate, which shall be provided upon request pending the submittal of the Contractor's weight estimate.

Disparities between the two estimates shall be identified and resolved in order to establish an approved maximum vessel light ship weight. Thereafter, the Contractor shall be responsible for obtaining in the completed vessel the approved weight and centers of gravity characteristics adjusted for authorized departures from the construction contemplated in the approved estimate.

Departures from the construction contemplated in the approved estimate which affect the light ship weight and centers of gravity shall not be undertaken until the Contractor has submitted to TxDOT its estimate of the effect on weight and center of gravity of the ship and obtained written approval to proceed with the departure.

### 835 FIELD OFFICE FOR INSPECTORS

Office facilities and telephone service shall be provided at the Contractor's facility for four (4) TxDOT Representatives. The expenses shall be borne by the Contractor. Office facilities shall have proper ventilation and shall be heated and air conditioned as appropriate. The facilities shall include the following as a minimum:

*Table 11: Field Office Accommodations*

QTY	ITEM
4	Desks w/chairs
4	Side chairs
2	Legal size, 4 drawer file cabinets
1	Drawing review table at least 3 ft x 6 ft and of standard height
1	Dedicated phone line capable of long-distance calls
1	High speed internet connection
2	Telephones
1	Dedicated parking spaces
1	Cylinder door locks and keys
1	Copier
-	Adequate lighting
-	Access to sanitary facilities

The TxDOT's Representatives shall be granted unhindered access to the Contractor's construction and shop areas. All costs associated with this inspection section shall be included in the Contract Price.

### 843 STABILITY

#### 843.1 GENERAL

The vessel shall comply with the stability requirements for a USCG Subchapter H passenger vessel per MSC “Guidelines for Review of Passenger Intact Stability” (H2-3) and “Guidelines for Review of Passenger Vessel Subdivision and Damage Stability” (H2-1) for operation on protected waters. The Contractor shall obtain a USCG approved stability letter based on the results of a stability test and Trim and Stability Booklet.

### 843.2 STABILITY TEST

Once fixed ballast has been installed (if applicable) and the vessel is considered complete, a stability test shall be performed by the Contractor at its expense in accordance with NVIC 17-91 and per the guidance described in ASTM F1321, "Standard Guide for Conducting a Stability Test (Lightweight Survey and Inclining Experiment) to Determine the Light Ship Displacement and Centers of Gravity of a Ship".

Prior to conducting the stability test, the Contractor shall prepare and submit to USCG the Stability Test Procedure per MSC "Review of Stability Test Procedures" (GEN-05). The Contractor shall be responsible for planning and scheduling the stability test and obtaining approval of its proposed procedures from USCG.

The Contractor shall conduct a stability test in accordance with the approved Stability Test Procedure with at least thirty (30) days' notice given to TxDOT and USCG to allow them to witness the stability test. The construction of the vessel at the time of the stability test shall be as complete as possible. The Contractor shall be responsible for all equipment, inclining weights, cranes, and services required.

Using the results of the stability test, the Contractor shall prepare a Stability Test Report, submit the report to USCG and TxDOT per MSC "Guidelines for the Submission of Stability Test Results" (GEN-02), and obtain written USCG approval of the calculated vessel light ship weight and centers of gravity upon USCG review of the Stability Test Report.

### 843.3 TRIM AND STABILITY BOOKLET

Based on the results of the stability test, the Contractor shall prepare a Trim and Stability Booklet per MSC "Guidelines for Preparation of Trim & Stability Booklets" (H2-06), which sets forth the stability data necessary to permit safe and efficient handling operation of the vessel. The Booklet shall include operating instructions to identify loading restrictions which must be maintained to assure that the vessel will meet the required intact and damage stability criteria over the entire operating range. These instructions shall be as clear and concise as practicable and shall be approved by the USCG and TxDOT.

Prior to delivery of the vessel, the Contractor shall furnish three (3) copies of a trim and stability booklet marked with USCG approval. At a minimum, the Booklet shall include loading examples with conditions for light ship (including fixed ballast if applicable), full load passengers and vehicles at full (95% or per TxDOT operating preference), mid (50%), and low (10%) level tanks, subdivision draft, and worst-case truck loading. Loading conditions used shall be subject to review and approval by the TxDOT Representative.

The Booklets shall be produced using General Hydrostatics (GHS) computer software, and the Contractor shall provide the hydrostatic model of the hull in electronic format (.GF).

## 851 TRAINING

Introductory training shall be provided to the TxDOT operators. The training shall provide an overview of the entire propulsion system, including controls and monitoring. The training shall include start up procedures, operating procedures, and shutdown procedures. The training shall include personnel

safety procedures. The training shall also include basic maintenance procedures and good practice. The training shall be provided at the Galveston, TX ferry facility. It shall be conducted onboard with all manufacturer's representatives upon delivery of the vessel for up to three days where 12 TxDOT employees will be trained each day.

TxDOT will contract directly with the propulsion system vendor for more extensive operational, maintenance and troubleshooting training.

## 856 INSTRUCTION BOOKS, OPERATING MANUALS, AND TECHNICAL DATA SHEETS

The Contractor shall prepare or obtain instruction books for all machinery, equipment, and systems provided by the Contractor for the vessel. The Contractor shall additionally prepare a vessel operation manual to the satisfaction of local OCMI and TxDOT. The instruction books provided shall contain complete operating, installation, maintenance, troubleshooting, and repair instructions and parts lists in sufficient detail for the operating personnel to operate, maintain, and repair ALL equipment. The parts lists shall be complete with the parts described so that required spare repair parts may be easily identified and ordered by the operating personnel.

The Contractor shall prepare a list of operating manuals and instruction books to be provided with the vessel. The list shall be submitted to the TxDOT Representative for review no later than ninety (90) calendar days before delivery of the vessel. TxDOT will review this list for omissions and corrections and return the document to the Contractor for revision.

One (1) draft copy of each instruction book shall be submitted to the TxDOT Representative for review and approval of format no later than sixty (60) calendar days before the vessel is delivered to TxDOT.

The Contractor shall not use operating manuals intended for final delivery to TxDOT as working manuals for use in installing and operating the equipment. If the Contractor requires this information, then additional information must be ordered for that use with the attendant cost borne by the Contractor. Instruction manuals and books clearly showing misuse shall not be accepted.

Items that are merely advertisements shall not be included in the books.

Photocopies of the original manufacturer's manuals will not be accepted and do not count towards fulfillment of this requirement. Each instruction book will be complete with factory or manufacturer original information. The cost incurred from the purchase of original manufacturer manuals shall be borne by the Contractor.

Instruction books shall contain information at least equivalent to that available to mechanics at an authorized overhaul facility of the manufacturer of the machinery or equipment covered.

Omission of information due to reasons such as "not normally furnished by the manufacturer" or "factory only" are not acceptable.

The Contractor shall deliver three (3) copies of the finished instruction books. Final copies shall be bound in loose leaf 3-ring binders appropriately marked on the front cover as to the content. The vessel shall not be accepted without first receiving the final copies of all instruction books.

Additionally, the Contractor shall provide an abbreviated step-by-step, start-up, operation, and shut-down procedures manual for the diesel electric propulsion system. The operation and procedures manual shall include photos, as necessary, of the actual components to help identify and locate them. The operation and procedures manual shall be provided bound in loose leaf 3- ring binders and as a Microsoft Word® file.

The Contractor shall furnish the following items to TxDOT upon delivery of the vessel:

1. Three sets of operation and maintenance manuals for each item of equipment.
2. Three sets of parts books that include prices.
3. Three sets of main propulsion installation plans, wiring diagrams, and other documentation.
4. Electronic copies of the above-mentioned documentation.
5. The Vessel's IMO number

A summary of documentation and parts required by this Specification is shown below:

- All working drawings and yard detail design production drawings (Section 003, Section 810.1)
- All system schematics and drawings developed by the Contractor (Section 030, Section 810.1))
- All supporting calculations and documents developed by the Contractor (Section 030, Section 810.1)
- 4 copies of the Contractor's Master Construction Schedule and a progress report, each month (Section 040.1)
- A plan schedule of working drawings (Section 040.2)
- All purchase (technical) specifications, requisitions, purchase orders, or similar descriptive data (Section 040.4)
- All correspondence and technical data affecting design features (Section 040.4)
- Proof of Buy America Compliance (Section 040.5)
- A noise and vibration evaluation report prior to construction (Section 073)
- Six copies of all plans and documents required for the construction of the vessel (Section 086)
- Framed and mounted plans required by regulatory bodies (Section 086)
- A technical manual consisting of all purchase orders, invoices, original manufacturer's operating and service manuals, preventive and corrective maintenance manuals and parts lists/sources for all the vessel's mechanical, electrical components and equipment. (Section 086)
- All material certifications (Section 086)
- A bound copy and electronic version of all Regulatory Body correspondence and certificates (Section 086, Section 810.1)
- Sounding Tables for all tanks ( Section 086, Section 810.8)
- Progress photographs every two weeks during construction (Section 091))
- Alignment reports for all applicable equipment (Section 180)
- A fixed ballast plan (Section 191)
- All emissions documentation for engines and generators (Section 233)
- One complete set of generator manufacturer's recommended spare parts (Section 233)
- One complete set of special engine tools (Section 233)
- ABS certificates for all applicable equipment
- Electrical Load Analysis/ AC and DC Voltage drop calculations updated every 90 days (Section 300.2)
- Plasticized copies of electrical one-lines at each switchboard (Section 300.2)

- A motor data booklet (Section 302.2)
- circuit design schematics inside each motor controller cover (Section 302.4)
- engraved label plates on motor controllers (Section 302.4)
- system schematics, parts lists, and cut sheets for emergency shutdowns (Section 302.5)
- All tools, software and equipment required for maintenance and diagnostics of BDPC system (Section 314)
- A price list of recommended spares for the BDPC system (Section 314)
- Panelboard directory cards for each panelboard, inside each panel door and electronically (Section 324.7)
- A panelboard directory booklet (Section 324.7)
- A testing binder that includes all testing, including factory acceptance testing, for equipment (Section 324.9)
- A complete alarm list (Section 430.8)
- An Operations manual for the fire detection system (Section 601.3)
- Keysets for all locks and a key legend (Section 604.4)
- A full sample drawing format (Section 810.1)
- Bills of Materials for all items purchased by the Contractor (Section 810.1)
- All studies and analysis outlined in Section 810.2
- "AS-BUILT FINAL" copies of each drawing; 6 printed copies and 3 electronic copies (Ref 810.3)
- Maintenance schedules as outlined in Section 810.4
- Vendor system diagrams as outlined in Section 810.5
- Display drawings for mounting onboard as outlined in Section 810.6
- An as-built Docking Plan as outlined in Section 810.7
- An independently prepared lightship weight estimate ( Section 833)
- A USCG approved stability letter (Section 843.1)
- A Trim and Stability Booklet (Section 843.3)
- Introductory Training (Section 851)
- Instruction Books, Operating Manuals, and Technical Data Sheets as outlined in Section 856
- Dock Trials and Sea Trials reports (Section 982.4, Section 928.5)
- Hull test reports for all tests listed in Section 982.1
- A thermographic imaging inspection report (Section 982.1)
- Electrical power, control, and monitoring test reports as outlined in Section 982.3

### 856.1 SOFTWARE PROGRAMS

Where equipment or systems are programmed for use on this vessel such as may be used in propulsion system, monitoring systems, HMIs, PLCs, door locks, etc., TxDOT shall be provided with the specific program as installed on the vessel and such licensed programs to allow their viewing, modification, updating and troubleshooting. TxDOT shall be the licensed TxDOT/registered user of all programs provided. TxDOT shall be provided with all data link cables for connection between the equipment and a PC.

## GROUP 900 - TESTS, TRIALS, AND DELIVERY

### 982 TESTS AND TRIALS

The Contractor shall conduct a testing program to demonstrate satisfactory workmanship, proper installation of equipment and materials, compliance with the Technical Specification and Drawings, and compliance with regulatory agency requirements. Commissioning of Voith units and controls and the Siemens units must be coordinated as each depends upon the other to commission.

Shop and installation tests shall be in accordance with SNAME Technical and Research Bulletin No. 3-39, "Guide for Shop and Installation Tests" 2018, as required. Any defects which may develop or become apparent in connection with the work covered herein shall be made good by the Contractor to the satisfaction of the representatives of TxDOT and the Regulatory Bodies.

Alternate test methods from those detailed in this section will be accepted with the approval of the ABS Surveyor or USCG inspector, as appropriate, and the TxDOT's Representative.

ABS or USCG may require more stringent test methods than those outlined in this section. The Contractor is required to satisfy such regulatory test requirements and ensure all outstanding items are clear and closed with all regulatory bodies.

The Contractor shall submit a complete schedule of tests to the TxDOT's Representative for approval not less than thirty (30) calendar days prior to commencement of testing. The Contractor shall prepare test and trial agenda. Dock, Builder's trials and sea trials shall be conducted in accordance with applicable sections of SNAME Technical and Research Bulletin No. 3-47 "Guide For Sea Trials" 2015.

Testing shall consist of dock trials, Sea Trials, and Operational Trials. All trials to be measured in hours. Operational Trials may be held at Galveston/Bolivar ferry facility with prior approval by TxDOT. All documented testing from factory to delivery shall have copies placed into binder titled "Testing Documents" and turned over to TxDOT in final documents.

The Contractor shall prepare and submit test memoranda of the test results to the TxDOT's Representative for approval. Two copies of all completed tests and test reports shall be submitted to the TxDOT's Representative.

The Contractor shall bear all expenses, furnish the crew, fuel, water, lubricating oil, special instruments, and supplies required for all tests and for all trials, including drydocking and/or underwater hull inspection and cleaning if necessary. Before sea trials and delivery of the vessel to the Ferry landing in Galveston, a temporary Certificate of Inspection (COI) must be provided. The final Galveston COI must be submitted to TxDOT and be in place without any outstanding ABS or USCG items before final acceptance.

#### 982.1 HULL TESTS

The purpose of hull tests is to demonstrate the watertightness and fairness of the structure and fittings. It is further intended that the Contractor demonstrate the satisfactory installation and operation, where applicable, of all items of outfit.

### Structure

The hull, watertight bulkheads, Car Deck, superstructure, and watertight closures shall be air box or air jet tested to prove tight all exterior surfaces. All watertight tests shall be performed prior to paint out.

### Deep Tanks

The deep tanks shall be independently tested, either hydrostatically or with a 2 psi air test, by filling each with fresh water to the height of the overflow. The tests shall be done after air pipes, sounding tubes, and all other connections have been fitted but prior to paint out.

### Doors, Scuttles, Manholes, and Closures

Doors, scuttles, manholes, and similar closures which are gasketed shall be chalk tested to prove full gasket contact. Watertight doors shall be hose tested in conjunction with the testing of the adjacent plating. Visually inspect other doors, scuttles, manholes, and closures to demonstrate proper workmanship and operation.

### Windows and Fixed Lights

Windows and fixed lights shall be hose tested in conjunction with the testing of the adjacent plating.

## 982.2 MACHINERY TESTS

The Contractor shall test machinery, equipment, piping, and systems according to the following procedures:

### Heating and Ventilation

Test the electrical circuits of the fans.

Commission, balance, and test each system to assure delivery of designed air quantities. Before testing and balancing, the following conditions shall exist:

- Systems shall be clean.
- Normally open closures and dampers shall be open.
- Fans and motors shall run in the proper direction of rotation with correct speed.

Operate each system at full design capacity and measure air flow.

Operate all ventilation system weather closures and fire dampers to demonstrate free operation without binding.

Test to confirm the proper operation of each HVAC control system to the satisfaction of the system supplier and TxDOT. Confirm the proper operation of each function included with the control system.

Test the ESS off-gassing fan and piping to confirm conformance with ESS manufacturer requirements.

Ensure ventilation shutdowns operate properly. Fans and dampers that are interlocked with fire suppression system releases shall be tested using test gas or another acceptable method to simulate actuation of each fire suppression system release. Tests shall be witnessed by ABS or USCG as appropriate.

Piping

Each piping system shall be tested then cleaned and flushed. Equipment, such as strainers and heat exchangers, which are normally subject to the pressure of the system, shall be tested with the system. For equipment such as heat exchangers, pressure shall be applied to one system at a time to allow the unit to be checked for internal leakage.

For fuel oil, lube oil, and system flushing requirements refer to Sections 261, 262, and 584.

Pressure shall be applied to each system in its entirety, unless otherwise specified. Hydrostatic pressure specified for the piping systems shall be maintained long enough to check thoroughly for leaks. The Contractor shall retest after any leaks have been repaired to prove each system tight.

The test fluid used shall be compatible with the system being tested. Shipboard test procedures, in pounds per square in gage, shall be as follows:

SYSTEM	TEST PRESSURE	TEST FLUID
Fire Main and Bilge	150 psi	Fresh water
Interior and exterior deck drains	Fill system to top fixture or vent	Fresh water
Sounding tubes, vents and overflows	Fill system to top fixture or vent	Fresh water
Engine jacket water/after cooler	30 psi	Fresh water
Compressed air: Ship's service Starting Air Compressor/Receiver Piping	150 psi 225 psi 450 psi	Dry air or nitrogen
Fuel Oil Transfer and Service	50 psi	Oil
Lube Oil and Dirty Oil	60 psi	Oil
Non-potable water	80 psi	Fresh Water
Chilled water	87 psi	Fresh Water

Pressure test piping for water mist and Novec fire suppression systems in accordance with ABS, USCG, and manufacturer requirements.

All relief valves and pressure safety devices shall be demonstrated to operate at their set pressure or shall be provided with current test certification. All pressure gauges shall be provided with lab calibration test and certification stickers along with certifying documents provided to the TxDOT's Representative.

Hydraulic, fuel, and lube oil hose assemblies shall be hydrostatically tested and provided with metal tags attached showing their test date and pressures.

Contractor shall verify and calibrate as necessary any tank level indicators (TLIs) against soundings or sight gauges.

### Compressed Air System

Demonstrate the compressed air system can support the requisite number of engines starts. Confirm correct airflow rate and pressure to all installed equipment. Upon completion of the engine starting tests, demonstrate that the ship service air compressor can restore the compressed air system receivers to their starting pressure of 250 psig within 45 minutes in accordance with ABS Rules.

### Diesel Generator Sets

Prior to installation onboard the vessel, Contractor shall conduct a factory acceptance test (FAT) for each combined diesel engine and generator skid. Individual generator set load testing shall be performed at the engine vendor facility and witnessed by the TxDOT and Siemens Representatives. FATs performed separately on the diesel engine or generator shall not count towards this requirement. The FAT is to include a build-up in loading of 25% increments for 30 minutes each. This will continue until 100% (MCR) is reached and maintained for four hours, for each generator set. For this an appropriately rated Industrial Resistor Bank or other TxDOT approved method is to be used. The generator shall be tested for insulation resistance.

The generator set shall be checked after installation for proper alignment and clearances.

The generator sets shall be tested in parallel after installation as part of a complete Propulsion Switchboard (MPS) installation load test. The electrical load shall consist of an adjustable industrial resistor bank rated for a minimum 3200kW. The load shall be built up in 25% increments of 30 minutes each to 100%, which shall be maintained for four hours. Individual generator set load testing shall be performed at the engine vendor facility and witnessed by TxDOT's Representative.

### Auxiliary Machinery

Each pump and compressor shall be tested with its respective system, both hydrostatically to determine tightness, and in operation. The Contractor shall confirm that pump shaft seals are rated for the test pressure. Check each item for proper installation, alignment, and rotation prior to the operating test. Data shall be recorded such that equipment performance can be evaluated and compared with the requirements of the Specification. Generally, the required data shall include the pressure change across the machine, rpm, power consumption, and, where applicable, the performance of controls and functions.

After data collection as listed above, and before acceptance, auxiliary machinery, and related equipment susceptible to cyclic operations shall be operationally tested for five full, rapid cycles to the satisfaction of TxDOT.

### Tanks

Tanks normally vented to the atmosphere shall be tested hydrostatically to 3 psig.

## 982.3 ELECTRICAL POWER, CONTROL, AND MONITORING TESTS

### General

Inspect the electrical installation for completeness, including tagging, labeling, and phase balancing of single phase loads. Inspect cable routing, securing, support, and clearance from chafe points. Operate circuit breakers manually under load to demonstrate proper action.

### Generator

The generator load test shall be conducted as described above. The loads used in these tests shall be measured as functions of the rated full load current. Measure and record the insulation resistance of the armature, field, and exciter windings "hot" immediately upon the conclusion of the factory load test.

### Insulation Resistance

Measure and record the insulation resistance of each circuit between conductors with branch and main circuit breakers open for all AC power circuits and for DC power circuits over 20 AT protection and elsewhere as required by USCG or ABS. Where applicable, the main neutral conductor shall be temporarily ungrounded. Disconnect the equipment from each circuit to enable satisfactory resistance values to be obtained and to protect the equipment. This test does not apply to signal and control circuits.

For distribution cable purchased by the spool, insulation resistance may be measured for the entire spool prior to installation aboard the vessel; testing shall be witnessed by TxDOT and documented by the Contractor.

The Contractor shall institute processes and procedures to ensure that all cables required to undergo insulation resistance testing are actually tested and documented, and that no cables are missed. A description of the procedures taken shall be provided to TxDOT for review and comment.

### Harmonic Content

Under operational conditions, record and analyze the AC waveform at the eVSP motors, ship service bus, emergency bus, and any other locations identified by the propulsion integrator, TxDOT, or regulatory bodies. Verify that total harmonic distortion does not exceed regulatory limits. Harmonics shall be recorded with bus ties both open and closed, and under light, medium, and heavy load conditions.

### Automation Testing

Check all switches, control devices, etc., for proper function. Calibrate and check automatic thermal control devices, alarm, and indicator devices. All pressure, flow, proximity, and temperature sensors shall be calibrated and tested. Test all alarm circuits by simulating the troubles monitored and record performance observed. Monitoring and alarm circuits shall be demonstrated to not alarm under normal transient conditions when equipment is being started or shut down or during operator command changes such as rapid RPM reduction of the main propulsion system. Each sensor or switch shall be tested, and the expected result at the system level shall be verified. Record the date, any deficiencies and corrections, and the date of satisfactory completion of each test; systems shall be repaired or modified and tests shall be repeated until all functions operate correctly. A report documenting test procedures and checks performed and all results shall be provided to TxDOT.

### Operational Testing

The Contractor shall methodically test each electrical and electronic system, equipment item, and device aboard the vessel. Results shall be documented and systems repaired or rectified and tests repeated until all functions operate correctly.

For all systems, check all operating pushbuttons, selector switches, pilot lights, remote pushbuttons, pressure switches and control devices to ensure their proper operation; electronically interfaced systems shall have equivalent functions on electronic buttons or touch screens tested. System specific components and functions such as heat detectors for the fire detection system, magnetic fire door hold backs, and sound powered phone bells shall be tested. Specifically, sound levels of public address from the GAI-Tronics system for both spoken announcements and automated broadcasts shall be tested and the system adjusted.

Test all lighting systems for adequate illumination and functionality of switching,

Test all motor driven appliances under normal operating load conditions. Record operating volts and amps for each motor for each phase. Check overload-tripping devices for the proper size heater element and freedom of operation.

Check electronic equipment under the supervision of the equipment manufacturer's representative. The electronic system shall not be considered complete until the FCC inspection and certification has been accomplished or addressed to the satisfaction of TxDOT. Review positioning of CCTV cameras for acceptable coverage and minimized blind spots.

#### Thermographic Imaging

Perform a thermographic imaging inspection of the generators, BDPC switchboard, ship service 480V and 208V switchboards, emergency 480V and 208V switchboards, distribution panels, auto bus transfer switches, generator rectifiers, propulsion drives, transformers, and all power distribution circuit connections. The imaging shall be performed with the subject equipment under load or within seconds of shutdown for equipment which cannot reasonably be accessed while energized. Imaging shall be performed under all design power system configuration, i.e. with all generators on line, battery only mode, both eVSP units running from one BDPC bus, bus ties open and closed, et cetera. Results of the survey shall be provided to TxDOT as a narrated video and as an interpreted printed color report.

#### 982.4 DOCK AND BUILDER'S TRIALS

Following completion of all preliminary testing, the propulsion system and auxiliary machinery shall be operated at the dock for a period of three (3) days of minimum four (4) hours per day to demonstrate satisfactory operation and readiness for sea. Readings shall be taken every thirty (30) minutes to one (1) hour. The propellers shall be run in opposition at maximum safe rpm. The steering, control, and navigating equipment shall be checked to verify their readiness for builder's trials. The plant shall develop maximum power considering mooring and dock facilities. Where there are duplicate auxiliary units, each unit shall be in service for half the time with the other unit shut down.

All parts of the machinery shall operate without undue heating, noise, or vibration. If any defects develop during these trials, the Contractor shall record all temperatures, pressures, electrical readings, etc. Readings from all trials to be provided to TxDOT.

Upon satisfactory completion of the dock trial, the Contractor shall conduct a builder's trial to demonstrate that the vessel will satisfactorily perform all requirements.

The TxDOT's Representatives may attend all dock, builder's, and sea trials.

## 982.5 SEA TRIALS

All sea trials shall be crewed by the Contractor. Upon satisfactory completion of the dock and builder's trial, the vessel shall be taken on a sea trial. The sea trials shall be conducted in open water under fair weather conditions and calm sea for a sufficient length of time to accomplish the following tests and trials. Sea trials shall be conducted with the hull and appendages free of marine growth.

Sea trials shall be conducted in deep water per the guidelines of SNAME T&R No. 3-47, with a minimum recommended depth of 50 ft. The trial draft shall be as near as possible to the design mean draft and on even keel. The trials shall consist of:

1. Endurance run of four hours at sustained maximum propulsion rpm, with two propulsion generators on line. The endurance run will alternate propulsion generators so that all four get approximately equal run time. Operating data shall be taken and recorded for all vessel systems at 15-minute intervals. Propulsor torque and horsepower shall be recorded at 30-minute intervals.
3. At TxDOT's request there shall also be normal propulsion running of two (2) days of six (6) hours each day, propulsion running without batteries for two (2) days of six (6) hours each day, and battery only propulsion running for thirty (30) minutes three (3) separate times. Allow adequate full charging between these tests.
4. Progressive speed trial over a measured mile. Three runs each way at no less than five different speeds covering the range from a speed of 6 knots to the speed achieved with the VSP units at max rated load of at least thirteen (13) knots. Propulsor torque and horsepower shall be recorded for each run.
5. Crash stop from full rated load. Runs shall be made in each direction with one eVSP and with both eVSP for a minimum of four total tests. Propulsor torque and horsepower shall be recorded for each of the runs.
6. Steering and maneuvering, including two turning circles each way with each end driving (four circles total).
7. "Crabbing" and "pivoting" with both eVSPs providing thrust.

During the progressive speed trials, and at any other times as may be appropriate, a ship's vibration and noise survey throughout the whole vessel, with adequate instrumentation, shall be made by the Contractor.

During the sea trials, propulsion power and RPM at each end and fuel rate shall be determined.

At trials, the vessel shall achieve a speed of 12 knots at design draft with a total propulsion power output of not more than 1,700 eKW.

All equipment, materials, gauges, thermometers, recording equipment, etc., necessary for the trials shall be furnished and installed by the Contractor. All readings from sea trials will be taken at appropriate intervals and shall be provided to TxDOT.

Complete trial reports shall be prepared by the Contractor and submitted to TxDOT as promptly as possible, for review and approval. Six (6) copies of the approved trial reports, suitably bound and in oil and water repellent covers, shall be furnished.

## 982.6 OPERATIONAL TRIALS

All sea trials shall be crewed by the Contractor. Operational trials shall consist of simulation of actual running conditions:

1. Run twenty (20) minutes full ahead.
2. Ten (10) minutes at 30% power to eVSP units to simulate unloading/loading evolution.
3. Switch pilothouse and go twenty (20) minutes full ahead the opposite direction.

The above shall be repeated in order and repeating for ten (10) days of six (6) hours each day. The vessel should complete a minimum of one hundred and twenty-five (125) hours of documented total trials with TxDOT and architect approval.

All readings from operational trials will be taken at appropriate intervals and shall be provided to TxDOT.

A fully licensed crew shall be provided by the Contractor for any power movement or trials as described above. This applies to the entire build of the vessel as well.

## 982.7 TEST AND TRIAL INSTRUMENTS

The Contractor shall furnish instruments for operational tests to provide sufficient data to analyze the performance of systems, machinery, and equipment.

Ship's gauges and instruments may be used for tests of the systems they serve. The Contractor shall furnish test instruments and means of connection, as necessary, for additional readings required to test machinery and systems.

Instruments shall be checked against standards at the beginning and end of the test program. If readings taken during a test appear unreasonable, TxDOT will require the Contractor to check all the instruments, gauges, and thermometers used on the test in question.

Following completion of sea trials, the Contractor shall coordinate with a local oil test laboratory to perform diagnostic analysis on all lubricants. The tests shall include the standard diagnostics recommended by the engine manufacturer, including tests for wear metals, water, and fuel contamination.

Tests shall include a sample of fresh oil of each type, prior to filling machinery, and an operating sample. The operating oil sample shall be drawn from a machine operating at normal temperatures. Samples shall not be drawn from stagnant points in the equipment system.

A spectrographic analysis shall be conducted for trace metals, employing an emission spectrometer for the following elements:

1. Iron
8. Aluminum
9. Lead
10. Nickel
11. Copper
12. Silver

13. Chromium
14. Tin
15. Silicon
16. Magnesium
17. Molybdenum

The following machinery shall be sampled:

1. Propulsion generator engines
2. Vehicle barrier hydraulic system
3. Electric Voith Schneider Propellers

## 983 DELIVERY

All sea trials and delivery shall be crewed by the Contractor. The Contractor shall deliver the vessel in accordance with the Contract and in a fully cleaned condition and ready for service. All items required by USCG CFR and ABS must be supplied with the vessel. All parts of the vessel shall be thoroughly cleaned of all dunnage and dirt, with particular emphasis on the ready condition of all tanks for immediate use without further preparation or cleaning. Special care shall be exercised that all surfaces in the tanks, pipelines, and machinery are clean and free from any foreign substance. The non-potable water tank and system shall have been chlorinated and shall be filled by the Contractor prior to delivery. A water test analysis shall be provided showing that the system meets safe hand washing standards and not tainted by algae, suspended solids, oil residue, solvents, or other hazardous chemicals.

The vessel shall be delivered to TxDOT after successful sea trials and an acceptance survey, complete and ready for service in full accordance with the Contract and these Specifications. Delivery is not to be used as any trial hours.

A major deficiency is any item affecting the safe navigation or the immediate, efficient use of the vessel. The existence of any major, uncorrected Contractor-responsible deficiency will be sufficient cause to reject delivery of the vessel. The delay in delivery resulting therefrom shall be a matter of Contractor responsibility. All major tests shall be completed prior to sea trials, and all tests shall be completed prior to delivery of the vessel. The existence of a large number of uncorrected minor deficiencies may be a cause for rejection of delivery.

To ensure that the vessel is in a proper condition for delivery, a final joint survey of the vessel will be made by TxDOT and the Contractor at least 3 days prior to the scheduled delivery date, along with a review of the status of completion of acceptance survey deficiencies and items delivered subsequent thereto. An agreement shall be reached between the Contractor and TxDOT based on this survey as to the extent of further cleaning and correction of deficiencies which must be completed prior to delivery of the vessel, and as to which work may be deferred for accomplishment after the vessel's delivery as a practical matter. In connection with this agreement, it must be recognized that under the Contract and this Specification, the Contractor is required to deliver the vessel free of all known defects and deficiencies and that deferral of corrective work is of the nature of a waiver. The Contractor, therefore, must also agree to the earliest practical accomplishment of any remaining acceptance deficiencies which are deferred until after delivery of the vessel for accomplishment, without interference with the scheduled use of the vessel.

The vessel shall be delivered by the Contractor, at his/her own risk and expense, with fuel and lube oil tanks at least 80% full, to TxDOT in Galveston, TX. All papers shall be turned over to TxDOT, or its Representative, before acceptance. A valid local Certificate of Inspection (COI) shall be completed by TxDOT upon time of delivery without any outstanding ABS or USCG items before final acceptance. The Contractor shall provide a knowledgeable operator to TxDOT to complete the COI through the local OCMI.

## 996 LAUNCHING AND DRY DOCKING

The Contractor shall be responsible for the safe and satisfactory launching of the vessel at a time agreed to by TxDOT and by all parties concerned. Arrangements for the Sponsor will be made by TxDOT. A launching plan including launching calculations shall be prepared and shall be submitted to TxDOT for review and approval. Expenses related to the launching shall be borne by the Contractor. If the vessel is to remain in the water, it shall be dry-docked every 180 days for inspection.

Dry-docking prior to sea trials is required unless the vessel has been in the water for no more than ninety (90) calendar days, the Contractor is responsible for conducting sea trials with a clean bottom, Voith propellers, appendages, and sea chests. Approximately 30 days prior to scheduled sea trials, the Contractor shall determine the condition of the bottom and sea chests and notify TxDOT of same. If necessary for the purpose of conducting proper trials, the Contractor shall be required to thoroughly clean the underwater surface of the hull. If the vessel has been in the water for more than ninety (90) calendar days prior to sea trials or delivery, the vessel shall be dry-docked and underwater surfaces including appendages, propellers, and sea chests shall be thoroughly cleaned and inspected.

If the vessel is constructed beyond the Gulf Coast region of the United States, the Contractor shall make arrangements to dry dock the vessel within 200 miles of Galveston, TX or as an alternative, conduct an underwater survey after delivery and prior to acceptance by TxDOT. The dry-docking shall include a thorough cleaning and inspection of underwater hull surfaces, including appendages, propellers, and sea chests. Damaged coatings, plate, propellers, and hull fittings shall be repaired prior to acceptance. As an alternative to this dry-docking, the Contractor may contract for an underwater video survey. The survey shall be conducted by a company certified for the procedure by ABS. The underwater video survey shall be conducted to the satisfaction of the TxDOT's Representative. The underwater survey shall be recorded and include live video and communications link to an observing area on the surface. Damage found shall be the responsibility of the Contractor to arrange and repair.

If at any time prior to formal acceptance of the vessel there is a warrantable reason for believing the underwater portion of the vessel to have been seriously impaired, the Contractor shall place the vessel in drydock and adequately inspect, repair, clean, and paint the damaged areas at its own expense. A protest or notice, by TxDOT filed with the Classification Society and sustained by them, shall be deemed a "warrantable reason" for requesting drydocking. Inspection for damage may be by diver if mutually agreed upon. USCG shall issue drydocking and internal structure credits.

## APPENDIX A

### ABS Design Review Open Comments

The following table includes open comments from ABS design review of the ABS Reviewed Drawings, including the applicable drawings and proposed path to resolution. Open comments can generally be grouped into three categories:

- (1) Open surveyor comment
- (2) USCG Alternative Compliance required
- (3) Additional details to be provided for ABS review during the detail design phase

Where alternative Compliance is required, similar arrangements have been approved in the Owner's fleet, as recently 2023 onboard "ESPERANZA HOPE ANDRADE". The Contractor shall resolve these comments with ABS and obtain all necessary alternative compliance from USCG prior to construction.

NO.	APPLICABLE DRAWINGS	ABS COMMENT	PATH TO RESOLUTION
E-003	Transducer Arrangement	<p>Manufacturer documentation such as datasheets for the transducer and transducer selector switch are to be made available to the attending Surveyor to check suitability of intended service and installation location.</p> <p>Installation of the transducer and wire stuffing box are to be verified to the satisfaction of the attending surveyor. [Refer to ABS Rules for Building and Classing Steel Vessels for Service on Rivers and Intercoastal Waterways 4-5-1/Table 2 and Table 3].</p>	Surveyor Comment

NO.	APPLICABLE DRAWINGS	ABS COMMENT	PATH TO RESOLUTION
L-005	Navigation Lights Arrangement	<p>(Comment 1) All-round lights shall be so located as not to be obscured by masts, topmasts or structures within angular sectors of more than 6 degrees (33 CFR 84.15(b)(i). Please submit calculations to show the same.</p> <p>(Comment 2) We noted your reply under comment L-002 for sidelights (i.e., Side lights are 10'-9 3/4" off CL, or 22.2' inboard of the molded beam. 10% of the beam is 6.6', placing the sidelights at this location is impractical, the current location is also common to the fleet, and acceptable to Flag State.). If impractical to place side sights not more than 10 percent of the breadth of the vessel inboard from the side, up to a maximum of 2 meters (33 CFR 84.03(b)), please approach the USCG and obtain exemption/acceptance and return a copy of the USCG letter to ABS for record. This comment remains open.</p>	Approach USCG for Alternative Compliance with justification from vessel arrangements and precedence of existing vessels in the Owner's fleet.
L-006	Bulwarks and misc Structure	Ventilation ducts for battery spaces are reserved pending submission of Risk assessment studies for ABS review as per ABS requirements for use of Lithium-ion Batteries in the marine and offshore industries, July 2022, Section 3.3.	Conduct a risk assessment study for ABS review including Failure Modes and Effects Analysis (FMEA)), Design Verification Test Procedures (DVTP), and Periodic Safety Test Procedures (PSTP)).

NO.	APPLICABLE DRAWINGS	ABS COMMENT	PATH TO RESOLUTION
L-009	Fire Boundary Plan	<p>Each Main Vertical Zone shall be served by at least one Type 1 stairway. Type 1 stairways should give access to the Embarkation Deck and should not give direct access to accommodations or other enclosed spaces in which a fire may originate (46 CFR 72.05-20(e-f). Please provide type I stairways from Bridge Deck to Main Deck for each MVZ.</p> <p>Alternatively, please provide justification or equivalency to the USCG for their acceptance and return a copy to ABS for record.</p>	<p>Approach USCG for Alternative Compliance.</p> <p>This stairway arrangement is consistent with existing vessel arrangements across the operator's fleet and have been approved by the OCMI, as recently as the vessel ESPERANZA "HOPE" ANDRADE, with acceptance of equivalency in July 2022.</p>
L-013	Fire Boundary Plan	<p>(Comment 1) Please provide details of windows facing exterior escape routes on Salon Deck in accordance 46 CFR Table 72.05-30 and Section 2.12.1.4, NVIC 9-97, Ch-1.</p> <p>(Comment 2) Please submit the USCG approval certificates of A-0 windows. We'll address this comment after the review is completed and determine if details of windows facing exterior escape routes on Salon Deck meet the requirements set forth in 46 CFR Table 72.05-30 and Section 2.12.1.4, NVIC 9-97, Ch-1.</p>	<p>Submit drawings of specific windows from the manufacturer for ABS review.</p>
L-015	Joinery and Ceiling Detail	<p>Please note that the following USCG certificates expired:</p> <ol style="list-style-type: none"> <li>164.107/5/0 - "Delta Marine Board" mineral wool structural insulation</li> <li>164.112/136/0 - "IMO CFJ" Fiber Glass cloth</li> </ol> <p>Please submit the valid USCG approval certificates of thermal insulation.</p>	<p>Revised drawing has removed reference to type certs. Verify USCG and Class acceptance of selected insulation prior to installation and provide certificates to ABS.</p>

NO.	APPLICABLE DRAWINGS	ABS COMMENT	PATH TO RESOLUTION
L-016	Joinery and Ceiling Detail	<p>The review of Mascoat Marine DTM thermal insulation Coating and Mascoat Sound Control DB sound damping coating is reserved. Please submit the detailed profiles of coating, locations of the coating and the USCG approval certificates for review.</p>	<p>Revised drawing has removed reference to type certs. Verify USCG and Class acceptance of selected insulation prior to installation and provide certificates to ABS.</p>
L-020	Fire and Safety Plan	<p>(Comment 1)                      Doors in stairway enclosures and Main Vertical Zone bulkheads shall be of the self-closing type capable of closing against a 3 1/2 degree list and be of a type which are capable of release from the control station and from a position at the door 46 CFR 72.05-25(b)(9).</p> <p>We noted that none of doors to stairways and Main Vertical Zone bulkheads above Main Deck are shown self-closing in the plan. Please revise the plan and provide the details of control mechanism.</p> <p>(Comment 2)                      We acknowledge that there are no internal stairways. We noted that the self-closing symbols are shown for the doors at MVZ boundary at frame 0 on Salon Deck. In accordance with 46 CFR 72.05-25(b)(9)(ii), all doors in stairway enclosures and Main Vertical Zone bulkheads, except those that are kept normally closed, shall be of a type which are capable of release from the control station and from a position at the door. The release mechanism shall be so designed that the door will automatically close in the event of disruption to the control system. Accordingly, this comment will be addressed/closed upon receipt of electrical diagram showing the control mechanism.</p>	<p>Provide details of magnetic release control of MVZ door for ABS review.</p>

NO.	APPLICABLE DRAWINGS	ABS COMMENT	PATH TO RESOLUTION
L-022	Fire and Safety Plan	<p>Ref. to Technical Specification (22048-001-832-0, Rev-), the vessel has capacity of total 501 persons (6 crew, maximum 495 passengers).</p> <p>In accordance with 3-5-1/3.5 of ABS Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways, 2022, liferafts of capacities of 627 accommodating 125% of the total number of persons on board are to be provided. It is noted that liferafts of capacity of 350 are shown in the drawing. Please revise.</p> <p>Alternatively, please submit the USCG approved copy of life saving appliances for our record.</p>	<p>Approach USCG for review and approval of the drawing.</p> <p>This arrangement is consistent with existing vessel arrangements across the operator's fleet and have been approved by the OCMI, as recently as the vessel ESPERANZA "HOPE" ANDRADE, with acceptance of equivalency in July 2022.</p>
P-036	Barrier Gate Hydraulics	<p>Hydraulic units with working pressures above 15.5 bar (15.8 kgf/cm<sup>2</sup> , 225 psi) installed within machinery spaces are to be placed in separate room or rooms or shielded as necessary to prevent any oil or oil mist that may escape under pressure from coming into contact with surfaces with temperatures in excess of 220°C (428°F), electrical equipment or other sources of ignition in accordance with 4-3-8/1.17 of the ABS Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways. This may be verified to the satisfaction of the attending Surveyor.</p>	Surveyor Comment
S-004	Typical Hull Sections, EOS Structure, ESS Structure	<p>Please provide the door and window scantling details included on all the transverse frames, Engineers Observation Structure and Energy Storage Space for ABS Review as per Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways, Part 3, Chapter 2, Section 5.</p>	Provide detail design drawings specific to this vessel from the door and window manufacturers for ABS review.

NO.	APPLICABLE DRAWINGS	ABS COMMENT	PATH TO RESOLUTION
S-006	Profile and Arrangements	<p>(Comment 1)                      Except as provided in ABS Rules 3-3-1/25 and fitted in watertight bulkheads dividing cargo between deck spaces, watertight doors in watertight bulkheads in passenger vessels are to be power-operated sliding doors in accordance with ABS Rivers Rules 3-3-1/21.1. It is noted all watertight doors fitted in watertight bulkheads at frames 19, 32, 39 and 49 on Hold Plan Level are hinged-type doors. Please revise accordingly.                      Alternatively, please provide justification for use of hinged watertight doors (see Section 624.2 of Technical Specifications) and seek the USCG for acceptance.</p> <p>(Comment 2)                      We noted that similar arrangements of class I doors are accepted by USCG onboard "EXPERANZA HOPE ANDRADE" (ABS Class ID: YY279840) in USCG letter H2-2202264 dated 12 July 2022. However, the USCG acceptance of class I watertight doors for "ESPERANZA HOPE ANDRADE" is based on vessel specifics and not a general policy for all fleets. Please submit the justification for use of hinged watertight doors (see Section 624.2 of Technical Specifications) and seek the USCG for acceptance in detail designs. This comment remains open.</p>	<p>Approach USCG for Alternative Compliance of WT door arrangement with justification similar to that used for the Owner's existing fleet.</p>
S-007	Deckhouse Structure	<p>Please provide the door and window scantling details in the deckhouse for ABS Review as per Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways, Part 3, Chapter 2, Section 5.</p>	<p>Provide detail design drawings specific to this vessel from the door and window manufacturers for ABS review.</p>

NO.	APPLICABLE DRAWINGS	ABS COMMENT	PATH TO RESOLUTION
S-009	Profile and Arrangements	<p>Each vessel 249 feet (76 meters) in LBP and upward must have a double bottom that extends from the fore to the aft peak bulkhead (46 CFR 171.105(d)). It is noted that this vessel does not have double bottoms. Please revise.</p> <p>Alternatively, please provide justification and seek the USCG for acceptance.</p>	<p>46 CFR 171.105 does not apply due to the intended route for this vessel. As noted in the Technical Specification, The USCG considers this route as protected waters for the existing TxDOT fleet.</p> <p>Approach USCG for approval of the vessel's operating route and applicability of 46 CFR 171.105.</p>

NO.	APPLICABLE DRAWINGS	ABS COMMENT	PATH TO RESOLUTION
S-014	Machinery Space Ventilation	<p>(Comment 1)                      Ref. to Fire Boundary Plan (22048-001-601-2), Engineer’s Observation Station (EOS) is classified as Control Station (category 1), and it is considered as safety area (46 CFR 72.05-5(a)(1)). In accordance with 46 CFR 72.05-50(g), ventilation ducts serving main machinery spaces which pass through safety areas shall be fitted with an automatic fire damper adjacent to the point of entry. Between the bulkhead and the fire damper the duct shall meet the applicable bulkhead requirement.</p> <p>It is noted that the A-60 insulated main intake for Engine Room which passes through EOS near frame 18 (PS) is not fitted with an automatic fire damper adjacent to the A-60 bulkhead between the engine room and the EOS as required by 46 CFR 72.05-50(g).</p> <p>Please revise the plan to include an automatic fire damper and provide the details of duct thickness between the bulkhead and the fire damper.</p> <p>(Comment 2)                      Duct thickness of 10 gauge (3.416 mm) is acceptable. An automatic fire damper adjacent to the A-60 bulkhead between the engine room and the EOS as required by 46 CFR 72.05-50(g) is to be provided. As per 46 CFR 72.05-50(b) and Section 2.14.1 of NVIC 9-97, Ch-1, fire dampers are to have a casing and blade constructed of at least 3 mm (11 USSG) thick steel, with a maximum gap of 3 mm (1/8 inch) between the blade and the casing. Where required to be fitted, closing appliances for all ventilators in positions 1 or 2 are to be of steel or other equivalent materials and deemed weathertight (USCG Loadline Technical Manual Chapter III-28). Please revise the plan to include an automatic fire damper; alternatively if special permission is obtained from the USCG, please forward a copy to ABS. This comment remains open.</p>	<p>Approach USCG for Alternative Compliance of fire damper arrangement with justification similar to that used for the Owner's existing fleet.</p> <p>This arrangement is consistent with existing vessel arrangements across the operator's fleet and have been approved by the OCMI, as recently as the vessel ESPERANZA "HOPE" ANDRADE, with acceptance of equivalency in July 2022.</p>

CONTROL : 0912-73-222  
PROJECT : F 2025(218)  
HIGHWAY : VA  
COUNTY : GALVESTON

TEXAS DEPARTMENT OF TRANSPORTATION

**GOVERNING SPECIFICATIONS AND SPECIAL PROVISIONS**

ALL SPECIFICATIONS AND SPECIAL PROVISIONS APPLICABLE TO THIS PROJECT ARE IDENTIFIED AS FOLLOWS:

STANDARD SPECIFICATIONS: ADOPTED BY THE TEXAS DEPARTMENT OF  
----- TRANSPORTATION SEPTEMBER 1, 2024.  
STANDARD SPECIFICATIONS ARE INCORPORATED  
INTO THE CONTRACT BY REFERENCE.

ITEMS 1 TO 9 INCL., GENERAL REQUIREMENTS AND COVENANTS

SPECIAL PROVISIONS: SPECIAL PROVISIONS WILL GOVERN AND TAKE  
----- PRECEDENCE OVER THE SPECIFICATIONS ENUMERATED  
HEREON WHEREVER IN CONFLICT THEREWITH.

REQUIRED CONTRACT PROVISIONS. ALL FEDERAL-AID PROJECTS (REV. 5-12)  
(FORM FHWA 1273)

WAGE RATES

SPECIAL PROVISION "NONDISCRIMINATION" (000---001)  
SPECIAL PROVISION "CERTIFICATION OF NONDISCRIMINATION IN EMPLOYMENT"  
(000---002)  
SPECIAL PROVISION "STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY  
CONSTRUCTION CONTRACT SPECIFIC" (000---003)  
SPECIAL PROVISION "ONTHEJOB TRAINING PROGRAM" (000---004)  
SPECIAL PROVISION "CARGO PREFERENCE ACT REQUIREMENTS IN FEDERAL AID  
CONTRA" (000---007)  
SPECIAL PROVISION "NOTICE OF CONTRACTOR PERFORMANCE EVALUATIONS"  
(000---016)  
SPECIAL PROVISION "CERTIFICATE OF INTERESTED PARTIES (FORM 1295)"  
(000---017)  
SPECIAL PROVISION "IMPORTANT NOTICE TO CONTRACTORS" (000---018)  
SPECIAL PROVISION "NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO  
ENSURE EQUAL EMPLOYEMENT OPPORTUNITY (EXECUTIVE O  
RDER 11" (000---020)  
SPECIAL PROVISION "DISADVANTAGED BUSINESS ENTERPRISE IN FEDERALAID"  
(000---022)  
SPECIAL PROVISION TO ITEM 6 (006---001)

SPECIAL SPECIFICATIONS:

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ITEM 7018 DIESEL ELECTRIC FERRY

GENERAL: THE ABOVE-LISTED SPECIFICATION ITEMS ARE THOSE UNDER WHICH  
----- PAYMENT IS TO BE MADE. THESE, TOGETHER WITH SUCH OTHER  
PERTINENT ITEMS, IF ANY, AS MAY BE REFERRED TO IN THE ABOVE-  
LISTED SPECIFICATION ITEMS, AND INCLUDING THE SPECIAL  
PROVISIONS LISTED ABOVE, CONSTITUTE THE COMPLETE SPECIFI-  
CATIONS FOR THIS PROJECT.

**Control**    **0912-73-222**  
**Project**    **F 2025(218)**  
**Highway**   **VA**  
**County**    **GALVESTON**

**DISADVANTAGED BUSINESS ENTERPRISE  
REQUIREMENTS**

The following goal for disadvantaged business enterprises is established:

**DBE**  
**0.0%**

## **CHILD SUPPORT STATEMENT**

**Under Section 231.006, Family Code, the vendor or applicant certifies that the individual or business entity named in this contract, bid, or application is not ineligible to receive the specified grant, loan, or payment and acknowledges that this contract may be terminated and payment may be withheld if this certification is inaccurate.**

## CONFLICT OF INTEREST CERTIFICATION

Pursuant to Texas Government Code Section 2261.252(b), the Department is prohibited from entering into contracts in which Department officers and employees have a financial interest.

By signing the Contract, the Contractor certifies that it is not prohibited from entering into a Contract with the Department as a result of a financial interest as defined under Texas Government Code Section 2261.252(b), and that it will exercise reasonable care and diligence to prevent any actions or conditions that could result in a conflict of interest with the Department.

The Contractor also certifies that none of the following individuals, nor any of their family members within the second degree of affinity or consanguinity, owns 1% or more interest or has a financial interest as defined under Texas Government Code Section 2261.252(b) in the Contractor:

- Any member of the Texas Transportation Commission; and
- The Department's Executive Director, General Counsel, Chief of Procurement and Field Support Operations, Director of Procurement, and Director of Contract Services.

Violation of this certification may result in action by the Department.

## E-VERIFY CERTIFICATION

Pursuant to Texas Transportation Code §223.051, all TxDOT contracts for construction, maintenance, or improvement of a highway must include a provision requiring Contractors and subcontractors to use the U.S. Department of Homeland Security's E-Verify system to determine employment eligibility. By signing the contract, the Contractor certifies that prior to the award of the Contract:

- the Contractor has registered with and will, to the extent permitted by law, utilize the United States Department of Homeland Security's E-Verify system during the term of the Contract to determine the eligibility of all persons hired to perform duties within Texas during the term of the agreement; and
- the Contractor will require that all subcontractors also register with and, to the extent permitted by law, utilize the United States Department of Homeland Security's E-Verify system during the term of the subcontract to determine the eligibility of all persons hired to perform duties within Texas during the term of the agreement.

Violation of this requirement constitutes a material breach of the Contract, subjects a subcontractor to removal from the Contract, and subjects the Contractor or subcontractors to possible sanctions in accordance with Title 43, Texas Administrative Code, Chapter 10, Subchapter F, "Sanctions and Suspension for Ethical Violations by Entities Doing Business with the Department."

## Certification Regarding Disclosure of Public Information

Pursuant to Subchapter J, Chapter 552, Texas Government Code, contractors executing a contract with a governmental body that results in the expenditure of at least \$1 million in public funds must:

- 1) preserve all contracting information\* as provided by the records retention requirements applicable to Texas Department of Transportation (TxDOT) for the duration of the contract,
- 2) on request of TxDOT, promptly provide any contracting information related to the contract that is in the custody or possession of the entity, and
- 3) on completion of the contract, either:
  - A. provide, at no cost to TxDOT, all contracting information related to the contract that is in the custody or possession of the entity, or
  - B. preserve the contracting information related to the contract as provided by the records retention requirements applicable to TxDOT

The requirements of Subchapter J, Chapter 552, Government Code, may apply to this contract, and the contractor or vendor agrees that the contract can be terminated if the contractor or vendor knowingly or intentionally fails to comply with a requirement of that subchapter.

By entering into Contract, the Contractor agrees to:

- provide, or make available, to TxDOT and any authorized governmental investigating or auditing agency all records, including electronic and payment records related to the contract, for the same period provided by the records retention schedule applicable to TxDOT, and
- ensure that all subcontracts include a clause requiring the same.

\* As defined in Government Code §552.003, "Contracting information" means the following information maintained by a governmental body or sent between a governmental body and a vendor, contractor, potential vendor, or potential contractor:

- 1) information in a voucher or contract relating to the receipt or expenditure of public funds by a governmental body;
- 2) solicitation or bid documents relating to a contract with a governmental body;
- 3) communications sent between a governmental body and a vendor, contractor, potential vendor, or potential contractor during the solicitation, evaluation, or negotiation of a contract;
- 4) documents, including bid tabulations, showing the criteria by which a governmental body evaluates each vendor, contractor, potential vendor, or potential contractor responding to a solicitation and, if applicable, an explanation of why the vendor or contractor was selected; and
- 5) communications and other information sent between a governmental body and a vendor or contractor related to the performance of a final contract with the governmental body or work performed on behalf of the governmental body.

## CERTIFICATION TO NOT BOYCOTT ISRAEL

Pursuant to Texas Government Code §2271.002, the Department must include a provision requiring a written verification affirming that the Contractor does not boycott Israel, as defined in Government Code §808.001, and will not boycott Israel during the term of the contract. This provision applies to a contract that:

- 1) is with a Contractor that is not a sole proprietorship,
- 2) is with a Contractor with 10 or more full-time employees, and
- 3) has a value of \$100,000 or more.

By signing the contract, the Contractor certifies that it does not boycott Israel and will not boycott Israel during the term of this contract. "Boycott" means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes.

Violation of this certification may result in action by the Department.

## CERTIFICATION TO NOT BOYCOTT ENERGY COMPANIES

Pursuant to Texas Government Code §2274.002, the Department must include a provision requiring a written verification affirming that the Contractor does not boycott energy companies, as defined in Government Code §809.001, and will not boycott energy companies during the term of the contract. This provision applies to a contract that:

- 1) is with a Contractor that is not a sole proprietorship,
- 2) is with a Contractor with 10 or more full-time employees, and
- 3) has a value of \$100,000 or more.

By signing the contract, the Contractor certifies that it does not boycott energy companies and will not boycott energy companies during the term of this contract. "Boycott" means taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations with a company because the company: (1) engages in the exploration, production, utilization, transportation, sale, or manufacturing of fossil fuel-based energy and does not commit or pledge to meet environmental standards beyond applicable federal and state law; or (2) does business with a company described by (1).

Violation of this certification may result in action by the Department.

## CERTIFICATION TO NOT DISCRIMINATE AGAINST FIREARM ENTITIES OR FIREARM TRADE ASSOCIATIONS

Pursuant to Texas Government Code §2274.002, the Department must include a provision requiring a written verification affirming that the Contractor:

- 1) does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association, as defined in Government Code §2274.001, and
- 2) will not discriminate against a firearm entity or firearm trade association during the term of the contract.

This provision applies to a contract that:

- 1) is with a Contractor that is not a sole proprietorship,
- 2) is with a Contractor with 10 or more full-time employees, and
- 3) has a value of \$100,000 or more.

By signing the contract, the Contractor certifies that it does not discriminate against a firearm entity or firearm trade association as described and will not do so during the term of this contract. "Discriminate against a firearm entity or firearm trade association" means, with respect to the entity or association, to: (1) refuse to engage in the trade of any goods or services with the entity or association based solely on its status as a firearm entity or firearm trade association; (2) refrain from continuing an existing business relationship with the entity or association based solely on its status as a firearm entity or firearm trade association; or (3) terminate an existing business relationship with the entity or association based solely on its status as a firearm entity or firearm trade association. "Discriminate against a firearm entity or firearm trade association" does not include: (1) the established policies of a merchant, retail seller, or platform that restrict or prohibit the listing or selling of ammunition, firearms, or firearm accessories; (2) a company's refusal to engage in the trade of any goods or services, decision to refrain from continuing an existing business relationship, or decision to terminate an existing business relationship to comply with federal, state, or local law, policy, or regulations or a directive by a regulatory agency, or for any traditional business reason that is specific to the customer or potential customer and not based solely on an entity's or association's status as a firearm entity or firearm trade association.

Violation of this certification may result in action by the Department.

# PROHIBITION ON CERTAIN TELECOMMUNICATIONS EQUIPMENT OR SERVICES

The Federal Register Notice issued the Final Rule and states that the amendment to 2 CFR 200.216 is effective on August 13, 2020. The new 2 CFR 200.471 regulation provides clarity that the telecommunications and video surveillance costs associated with 2 CFR 200.216 are unallowable for services and equipment from these specific providers. OMB's Federal Register Notice includes the new 2 CFR 200.216 and 2 CFR 200.471 regulations.

<https://www.federalregister.gov/documents/2020/08/13/2020-17468/guidance-for-grants-and-agreements>

Per the Federal Law referenced above, use of services, systems, or services or systems that contain components produced by any of the following manufacturers is strictly prohibited for use on this project. Therefore, for any telecommunications, CCTV, or video surveillance equipment, services or systems cannot be manufactured by, or have components manufactured by:

- Huawei Technologies Company,
- ZTE Corporation (any subsidiary and affiliate of such entities),
- Hytera Communications Corporation,
- Hangzhou Hikvision Digital Technology Company,
- Dahua Technology Company (any subsidiary and affiliate of such entities).

Violation of this prohibition will require replacement of the equipment at the contractor's expense.

**REQUIRED CONTRACT PROVISIONS  
FEDERAL-AID CONSTRUCTION CONTRACTS**

- I. General
- II. Nondiscrimination
- III. Non-segregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
- XI. Certification Regarding Use of Contract Funds for Lobbying
- XII. Use of United States-Flag Vessels:

**ATTACHMENTS**

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

**I. GENERAL**

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work

performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

**II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)**

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

**1. Equal Employment Opportunity:** Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (see 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

**2. EEO Officer:** The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

**3. Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

**4. Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

**5. Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action

within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

#### **6. Training and Promotion:**

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

**7. Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide

sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

**8. Reasonable Accommodation for Applicants / Employees with Disabilities:** The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

**9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

#### **10. Assurances Required:**

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

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

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

**11. Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

### III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than \$10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

### IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway

Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

#### 1. Minimum wages (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act ([29 CFR part 3](#))), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act ([40 U.S.C. 3141\(2\)\(B\)](#)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH-1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in [29 CFR part 1](#), a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

(i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

(ii) The classification is used in the area by the construction industry; and

(iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. *Conformance.* (1) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is used in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to [DBAconformance@dol.gov](mailto:DBAconformance@dol.gov). The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to [DBAconformance@dol.gov](mailto:DBAconformance@dol.gov), refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division

under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

d. *Fringe benefits not expressed as an hourly rate.* Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. *Unfunded plans.* If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided*, That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

f. *Interest.* In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

## 2. Withholding (29 CFR 5.5)

a. *Withholding requirements.* The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with paragraph

2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:

- (1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- (2) A contracting agency for its procurement costs;
- (3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- (4) A contractor's assignee(s);
- (5) A contractor's successor(s); or
- (6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901–3907](#).

### 3. Records and certified payrolls (29 CFR 5.5)

a. *Basic record requirements (1) Length of record retention.* All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) *Information required.* Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in [40 U.S.C. 3141\(2\)\(B\)](#) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) *Additional records relating to fringe benefits.* Whenever the Secretary of Labor has found under paragraph 1.e. of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in [40 U.S.C. 3141\(2\)\(B\)](#) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(4) *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. *Certified payroll requirements (1) Frequency and method of submission.* The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting

agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) *Information required.* The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker ( e.g., the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH-347 or in any other format desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division website at <https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347.pdf> or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) *Statement of Compliance.* Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;

(ii) That each laborer or mechanic (including each helper and apprentice) working on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in [29 CFR part 3](#); and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) *Use of Optional Form WH-347.* The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(3) of this section.

(5) *Signature*. The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification*. The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under [18 U.S.C. 1001](#) and [31 U.S.C. 3729](#).

(7) *Length of certified payroll retention*. The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents*. The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access* (1) *Required record disclosures and access to workers*. The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements*. If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under [29 CFR part 6](#) any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures*. Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address

of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

#### **4. Apprentices and equal employment opportunity (29 CFR 5.5)**

a. *Apprentices* (1) *Rate of pay*. Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits*. Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio*. The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates*. Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity*. The use of apprentices and journeyworkers under this part must be in conformity with

the equal employment opportunity requirements of Executive Order 11246, as amended, and [29 CFR part 30](#).

c. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeyworkers shall not be greater than permitted by the terms of the particular program.

**5. Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.

**6. Subcontracts.** The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 29 CFR 5.5.

**7. Contract termination: debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

**8. Compliance with Davis-Bacon and Related Act requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.

**9. Disputes concerning labor standards.** As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

**10. Certification of eligibility.** a. By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of [40 U.S.C. 3144\(b\)](#) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of [40 U.S.C. 3144\(b\)](#) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, [18 U.S.C. 1001](#).

**11. Anti-retaliation.** It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#);

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#);

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#); or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or [29 CFR part 1](#) or [3](#).

## V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchpersons and guards.

**1. Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.

**2. Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in paragraph 1. of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such 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 watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)\* 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 the clause set forth in paragraph 1. of this section.

\* \$31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

### 3. Withholding for unpaid wages and liquidated damages

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, 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 that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section IV paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

- (1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
- (2) A contracting agency for its procurement costs;
- (3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
- (4) A contractor's assignee(s);
- (5) A contractor's successor(s); or
- (6) A claim asserted under the Prompt Payment Act, [31 U.S.C. 3901](#)–3907.

**4. Subcontracts.** The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the

event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

**5. Anti-retaliation.** It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or

d. Informing any other person about their rights under CWHSSA or this part.

### VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
- (2) the prime contractor remains responsible for the quality of the work of the leased employees;

- (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
- (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on long-standing interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

## **VII. SAFETY: ACCIDENT PREVENTION**

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and

health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

## **VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS**

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

**IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)**

This provision is applicable to all Federal-aid construction contracts in excess of \$150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees 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 Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

**X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

**1. Instructions for Certification – First Tier Participants:**

- a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.
- b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.
- c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.
- d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 180.300.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov/>). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

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**2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:**

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

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**3. Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which

this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 2 CFR 1200.220 and 1200.332.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 1200.220.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov/>), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily

excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

\* \* \* \* \*

#### **4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:**

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

\* \* \* \* \*

#### **XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000. 49 CFR Part 20, App. A.

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. 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 any Federal 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.

b. 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 Federal 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.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. 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.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

#### **XII. USE OF UNITED STATES-FLAG VESSELS:**

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize 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 this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.

2. To furnish within 20 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 paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS  
PREFERENCE FOR APPALACHIAN DEVELOPMENT  
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS  
ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B)**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

The wage rates listed herein are those predetermined by the Secretary of Labor and State Statute and listed in the United States Department of Labor's (USDOL) General Decisions dated 01-05-2024 and are the minimum wages to be paid accordingly for each specified classification. To determine the applicable wage rate zone, a list entitled "TEXAS COUNTIES IDENTIFIED BY WAGE RATE ZONES" is provided in the contract. Any wage rate that is not listed herein and not in the USDOL's general decision, must be requested by the contractor through the completion of an Additional Classification and Wage Rate Request and be submitted for approval. IMPORTANT NOTICE FOR STATE PROJECTS: only the controlling wage rate zone applies to the contract. Effective 01-05-2024.

CLASS. #	CLASSIFICATION DESCRIPTION	ZONE TX02 *(TX20240002)	ZONE TX03 *(TX20240003)	ZONE TX04 *(TX20240004)	ZONE TX05 *(TX20240005)	ZONE TX06 *(TX20240006)	ZONE TX07 *(TX20240007)	ZONE TX08 *(TX20240008)	ZONE TX24 *(TX20240024)	ZONE TX25 *(TX20240025)	ZONE TX27 *(TX20240027)	ZONE TX28 *(TX20240028)	ZONE TX29 *(TX20240029)	ZONE TX30 *(TX20240030)	ZONE TX37 *(TX20240037)	ZONE TX38 *(TX20240038)	ZONE TX42 *(TX20240042)
1428	Agricultural Tractor Operator						\$12.69					\$12.35			\$11.75		
1300	Asphalt Distributor Operator	\$14.87	\$13.48	\$13.88	\$15.72	\$15.58	\$15.55	\$15.72	\$13.28	\$15.32	\$15.62	\$14.36	\$14.25	\$14.03	\$13.75	\$14.06	\$14.40
1303	Asphalt Paving Machine Operator	\$13.40	\$12.25	\$12.35	\$13.87	\$14.05	\$14.36	\$14.20	\$13.26	\$13.99	\$14.68	\$12.92	\$13.44	\$12.53	\$14.00	\$14.32	\$12.99
1106	Asphalt Raker	\$12.28	\$10.61	\$12.02	\$14.21	\$11.65	\$12.12	\$11.64	\$11.44	\$12.69	\$12.05	\$11.34	\$11.67	\$11.40	\$12.59	\$12.36	\$11.78
1112	Batching Plant Operator, Asphalt																
1115	Batching Plant Operator, Concrete																
1214	Blaster																
1615	Boom Truck Operator						\$18.36										
1444	Boring Machine Operator																
1305	Broom or Sweeper Operator	\$11.21	\$10.33	\$10.08	\$11.99		\$11.04	\$11.62		\$11.74	\$11.41	\$10.30		\$10.23	\$10.60	\$12.68	\$11.05
1144	Communications Cable Installer																
1124	Concrete Finisher, Paving and Structures	\$13.55	\$12.46	\$13.16	\$12.85	\$12.64	\$12.56	\$12.77	\$12.44	\$14.12	\$13.04	\$13.38	\$12.64	\$12.80	\$12.79	\$12.98	\$13.32
1318	Concrete Pavement Finishing Machine Operator				\$16.05		\$15.48			\$16.05		\$19.31				\$13.07	
1315	Concrete Paving, Curing, Float, Texturing Machine Operator											\$16.34				\$11.71	
1333	Concrete Saw Operator				\$14.67					\$14.48	\$17.33					\$13.99	
1399	Concrete/Gunite Pump Operator																
1344	Crane Operator, Hydraulic 60 tons or less				\$18.22		\$18.36			\$18.12	\$18.04	\$20.21			\$18.63	\$13.86	
1345	Crane Operator, Hydraulic Over 80 Tons																
1342	Crane Operator, Lattice Boom 80 Tons or Less	\$16.82	\$14.39	\$13.85	\$17.27		\$15.87			\$17.27		\$14.67			\$16.42	\$14.97	\$13.87
1343	Crane Operator, Lattice Boom Over 80 Tons				\$20.52		\$19.38			\$20.52		\$17.49			\$25.13	\$15.80	
1306	Crawler Tractor Operator	\$13.96	\$16.63	\$13.62	\$14.26		\$15.67			\$14.07	\$13.15	\$13.38			\$14.60	\$13.68	\$13.50
1351	Crusher or Screen Plant Operator																
1446	Directional Drilling Locator						\$11.67										
1445	Directional Drilling Operator				\$20.32		\$17.24										
1139	Electrician	\$20.96		\$19.87	\$19.80		\$26.35		\$20.27	\$19.80		\$20.92				\$27.11	\$19.87
1347	Excavator Operator, 50,000 pounds or less	\$13.46	\$12.56	\$13.67	\$17.19		\$12.88	\$14.38	\$13.49	\$17.19		\$13.88			\$14.09	\$12.71	\$14.42
1348	Excavator Operator, Over 50,000 pounds		\$15.23	\$13.52	\$17.04		\$17.71			\$16.99	\$18.80	\$16.22				\$14.53	\$13.52
1150	Flagger	\$9.30	\$9.10	\$8.50	\$10.28	\$8.81	\$9.45	\$8.70		\$10.06	\$9.71	\$9.03	\$8.81	\$9.08	\$9.90	\$10.33	\$8.10
1151	Form Builder/Setter, Structures	\$13.52	\$12.30	\$13.38	\$12.91	\$12.71	\$12.87	\$12.38	\$12.26	\$13.84	\$12.98	\$13.07	\$13.61	\$12.82	\$14.73	\$12.23	\$12.25
1160	Form Setter, Paving & Curb	\$12.36	\$12.16	\$13.93	\$11.83	\$10.71	\$12.94			\$13.16	\$12.54	\$11.33	\$10.69		\$13.33	\$12.34	\$13.93
1360	Foundation Drill Operator, Crawler Mounted				\$17.99					\$17.99						\$17.43	
1363	Foundation Drill Operator, Truck Mounted		\$16.86	\$22.05	\$21.51		\$16.93			\$21.07	\$20.20	\$20.76		\$17.54	\$21.39	\$15.89	\$22.05
1369	Front End Loader Operator, 3 CY or Less	\$12.28	\$13.49	\$13.40	\$13.85		\$13.04	\$13.15	\$13.29	\$13.69	\$12.64	\$12.89			\$13.51	\$13.32	\$12.17
1372	Front End Loader Operator, Over 3 CY	\$12.77	\$13.69	\$12.33	\$14.96		\$13.21	\$12.86	\$13.57	\$14.72	\$13.75	\$12.32			\$13.19	\$13.17	\$13.02
1329	Joint Sealer																
1172	Laborer, Common	\$10.30	\$9.86	\$10.08	\$10.51	\$10.71	\$10.50	\$10.24	\$10.58	\$10.72	\$10.45	\$10.30	\$10.25	\$10.03	\$10.54	\$11.02	\$10.15
1175	Laborer, Utility	\$11.80	\$11.53	\$12.70	\$12.17	\$11.81	\$12.27	\$12.11	\$11.33	\$12.32	\$11.80	\$11.53	\$11.23	\$11.50	\$11.95	\$11.73	\$12.37
1346	Loader/Backhoe Operator	\$14.18	\$12.77	\$12.97	\$15.68		\$14.12			\$15.18	\$13.58	\$12.87		\$13.21	\$14.13	\$14.29	\$12.90
1187	Mechanic	\$20.14	\$15.47	\$17.47	\$17.74	\$17.00	\$17.10			\$17.68	\$18.94	\$18.58	\$17.00	\$16.61	\$18.46	\$16.96	\$17.47

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1380	Milling Machine Operator Motor Grader Operator,	\$15.54	\$14.64	\$12.22	\$14.29		\$14.18			\$14.32	\$14.35	\$12.86			\$14.75	\$13.53	\$12.80
1390	Fine Grade	\$17.49	\$16.52	\$16.88	\$17.12	\$18.37	\$18.51	\$16.69	\$16.13	\$17.19	\$18.35	\$17.07	\$17.74	\$17.47	\$17.08	\$15.69	\$20.01
1393	Motor Grader Operator, Rough	\$16.15	\$14.62	\$15.83	\$16.20	\$17.07	\$14.63	\$18.50		\$16.02	\$16.44	\$15.12	\$16.85	\$14.47	\$17.39	\$14.23	\$15.53
1413	Off Road Hauler			\$10.08	\$12.26		\$11.88			\$12.25		\$12.23			\$13.00	\$14.60	
1196	Painter, Structures					\$21.29	\$18.34						\$21.29			\$18.62	
1396	Pavement Marking Machine Operator	\$16.42		\$13.10	\$13.55		\$19.17	\$12.01		\$13.63	\$14.60	\$13.17		\$16.65	\$10.54	\$11.18	\$13.10
1443	Percussion or Rotary Drill Operator																
1202	Piledriver															\$14.95	
1205	Pipelayer		\$11.87	\$14.64	\$13.17	\$11.17	\$12.79		\$11.37	\$13.24	\$12.66	\$13.24	\$11.17	\$11.67		\$12.12	\$14.64
1384	Reclaimer/Pulverizer Operator	\$12.85			\$11.90		\$12.88			\$11.01		\$10.46					
1500	Reinforcing Steel Worker	\$13.50	\$14.07	\$17.53	\$16.17		\$14.00			\$16.18	\$12.74	\$15.83		\$17.10		\$15.15	\$17.72
1402	Roller Operator, Asphalt	\$10.95		\$11.96	\$13.29		\$12.78	\$11.61		\$13.08	\$12.36	\$11.68			\$11.71	\$11.95	\$11.50
1405	Roller Operator, Other	\$10.36		\$10.44	\$11.82		\$10.50	\$11.64		\$11.51	\$10.59	\$10.30		\$12.04	\$12.85	\$11.57	\$10.66
1411	Scraper Operator	\$10.61	\$11.07	\$10.85	\$12.88		\$12.27		\$11.12	\$12.96	\$11.88	\$12.43		\$11.22	\$13.95	\$13.47	\$10.89
1417	Self-Propelled Hammer Operator																
1194	Servicer	\$13.98	\$12.34	\$14.11	\$14.74		\$14.51	\$15.56	\$13.44	\$14.58	\$14.31	\$13.83		\$12.43	\$13.72	\$13.97	\$14.11
1513	Sign Erector																
1708	Slurry Seal or Micro-Surfacing Machine Operator																
1341	Small Slipform Machine Operator									\$15.96							
1515	Spreader Box Operator	\$12.60		\$13.12	\$14.71		\$14.04			\$14.73	\$13.84	\$13.68		\$13.45	\$11.83	\$13.58	\$14.05
1705	Structural Steel Welder															\$12.85	
1509	Structural Steel Worker						\$19.29									\$14.39	
1339	Subgrade Trimmer																
1143	Telecommunication Technician																
1145	Traffic Signal/Light Pole Worker						\$16.00										
1440	Trenching Machine Operator, Heavy						\$18.48										
1437	Trenching Machine Operator, Light																
1609	Truck Driver Lowboy-Float	\$14.46	\$13.63	\$13.41	\$15.00	\$15.93	\$15.66			\$16.24	\$16.39	\$14.30	\$16.62	\$15.63	\$14.28	\$16.03	\$13.41
1612	Truck Driver Transit-Mix				\$14.14					\$14.14							
1600	Truck Driver, Single Axle	\$12.74	\$10.82	\$10.75	\$13.04	\$11.61	\$11.79	\$13.53	\$13.16	\$12.31	\$13.40	\$10.30	\$11.61		\$11.97	\$11.46	\$10.75
1606	Truck Driver, Single or Tandem Axle Dump Truck	\$11.33	\$14.53	\$11.95	\$12.95		\$11.68		\$14.06	\$12.62	\$11.45	\$12.28		\$13.08	\$11.68	\$11.48	\$11.10
1607	Truck Driver, Tandem Axle Tractor with Semi Trailer	\$12.49	\$12.12	\$12.50	\$13.42		\$12.81	\$13.16		\$12.86	\$16.22	\$12.50			\$13.80	\$12.27	\$12.50
1441	Tunneling Machine Operator, Heavy																
1442	Tunneling Machine Operator, Light																
1706	Welder		\$14.02		\$14.86		\$15.97		\$13.74	\$14.84					\$13.78		
1520	Work Zone Barricade Servicer	\$10.30	\$12.88	\$11.46	\$11.70	\$11.57	\$11.85	\$10.77		\$11.68	\$12.20	\$11.22	\$11.51	\$12.96	\$10.54	\$11.67	\$11.76

Notes:

\*Represents the USDOL wage decision.

Any worker employed on this project shall be paid at the rate of one and one half (1-1/2) times the regular rate for every hour worked in excess of forty (40) hours per week.

For reference, the titles and descriptions for the classifications listed here are detailed further in the AGC of Texas' *Standard Job Classifications and Descriptions for Highway, Heavy, Utilities, and Industrial Construction in Texas* posted on the AGC's Web site for any contractor.

**TEXAS COUNTIES IDENTIFIED BY  
WAGE RATE ZONES: 2, 3, 4, 5, 6, 7, 8, 24, 25, 27, 28, 29, 30, 37, 38, 42**

County Name	Zone	County Name	Zone	County Name	Zone	County Name	Zone
Anderson	28	Donley	37	Karnes	27	Reagan	37
Andrews	37	Duval	30	Kaufman	25	Real	37
Angelina	28	Eastland	37	Kendall	7	Red River	28
Aransas	29	Ector	2	Kenedy	30	Reeves	8
Archer	25	Edwards	8	Kent	37	Refugio	27
Armstrong	2	El Paso	24	Kerr	27	Roberts	37
Atascosa	7	Ellis	25	Kimble	37	Robertson	7
Austin	38	Erath	28	King	37	Rockwall	25
Bailey	37	Falls	28	Kinney	8	Runnels	37
Bandera	7	Fannin	28	Kleberg	27	Rusk	4
Bastrop	7	Fayette	27	Knox	37	Sabine	28
Baylor	37	Fisher	37	Lamar	28	San Augustine	28
Bee	27	Floyd	37	Lamb	37	San Jacinto	38
Bell	7	Foard	37	Lampasas	7	San Patricio	29
Bexar	7	Fort Bend	38	LaSalle	30	San Saba	37
Blanco	27	Franklin	28	Lavaca	27	Schleicher	37
Borden	37	Freestone	28	Lee	27	Scurry	37
Bosque	28	Frio	27	Leon	28	Shackelford	37
Bowie	4	Gaines	37	Liberty	38	Shelby	28
Brazoria	38	Galveston	38	Limestone	28	Sherman	37
Brazos	7	Garza	37	Lipscomb	37	Smith	4
Brewster	8	Gillespie	27	Live Oak	27	Somervell	28
Briscoe	37	Glasscock	37	Llano	27	Starr	30
Brooks	30	Goliad	29	Loving	37	Stephens	37
Brown	37	Gonzales	27	Lubbock	2	Sterling	37
Burleson	7	Gray	37	Lynn	37	Stonewall	37
Burnet	27	Grayson	25	Madison	28	Sutton	8
Caldwell	7	Gregg	4	Marion	28	Swisher	37
Calhoun	29	Grimes	28	Martin	37	Tarrant	25
Callahan	25	Guadalupe	7	Mason	27	Taylor	2
Cameron	3	Hale	37	Matagorda	27	Terrell	8
Camp	28	Hall	37	Maverick	30	Terry	37
Carson	2	Hamilton	28	McCulloch	37	Throckmorton	37
Cass	28	Hansford	37	McLennan	7	Titus	28
Castro	37	Hardeman	37	McMullen	30	Tom Green	2
Chambers	38	Hardin	38	Medina	7	Travis	7
Cherokee	28	Harris	38	Menard	37	Trinity	28
Childress	37	Harrison	42	Midland	2	Tyler	28
Clay	25	Hartley	37	Milam	28	Upshur	4
Cochran	37	Haskell	37	Mills	37	Upton	37
Coke	37	Hays	7	Mitchell	37	Uvalde	30
Coleman	37	Hemphill	37	Montague	37	Val Verde	8
Collin	25	Henderson	28	Montgomery	38	Van Zandt	28
Collingsworth	37	Hidalgo	3	Moore	37	Victoria	6
Colorado	27	Hill	28	Morris	28	Walker	28
Comal	7	Hockley	37	Motley	37	Waller	38
Comanche	37	Hood	28	Nacogdoches	28	Ward	37
Concho	37	Hopkins	28	Navarro	28	Washington	28
Cooke	37	Houston	28	Newton	28	Webb	3
Coryell	7	Howard	37	Nolan	37	Wharton	27
Cottle	37	Hudspeth	8	Nueces	29	Wheeler	37
Crane	37	Hunt	25	Ochiltree	37	Wichita	5
Crockett	8	Hutchinson	37	Oldham	37	Wilbarger	37
Crosby	2	Irion	2	Orange	38	Willacy	30
Culberson	8	Jack	28	Palo Pinto	28	Williamson	7
Dallam	37	Jackson	27	Panola	28	Wilson	7
Dallas	25	Jasper	28	Parker	25	Winkler	37
Dawson	37	Jeff Davis	8	Parmer	37	Wise	25
Deaf Smith	37	Jefferson	38	Pecos	8	Wood	28
Delta	25	Jim Hogg	30	Polk	28	Yoakum	37
Denton	25	Jim Wells	27	Potter	2	Young	37
DeWitt	27	Johnson	25	Presidio	8	Zapata	30
Dickens	37	Jones	25	Rains	28	Zavala	30
Dimmit	30			Randall	2		

# Special Provision to Item 000

## Nondiscrimination



### 1. DESCRIPTION

All recipients of federal financial assistance are required to comply with various nondiscrimination laws, including Title VI of the Civil Rights Act of 1964, as amended (Title VI). Title VI forbids discrimination against anyone in the United States on the grounds of race, color, or national origin by any agency receiving federal funds.

The Texas Department of Transportation, as a recipient of federal financial assistance, and under Title VI and related statutes, ensures that no person will on the grounds of race, religion (where the primary objective of the financial assistance is to provide employment in accordance with 42 USC 2000d-3), color, national origin, sex, age, or disability be excluded from participation in, be denied the benefits of, or otherwise be subjected to discrimination under any Department programs or activities.

### 2. DEFINITION OF TERMS

Where the term "Contractor" appears in the following six nondiscrimination clauses, the term "Contractor" is understood to include all parties to Contracts or agreements with the Department.

### 3. NONDISCRIMINATION PROVISIONS

During the performance of this Contract, the Contractor agrees as follows.

- 3.1. **Compliance with Regulations.** The Contractor must comply with the Regulations pertinent to nondiscrimination in federally assisted programs of the United States Department of Transportation 49 CFR 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this Contract.
- 3.2. **Nondiscrimination.** The Contractor, regarding the work performed during the Contract, must 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 must not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the Contract covers a program set forth in Appendix B of the Regulations.
- 3.3. **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, the Contractor must notify each potential subcontractor or supplier of the Contractor's obligations under this Contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
- 3.4. **Information and Reports.** The Contractor must provide all information and reports required by the Regulations or directives issued pursuant thereto, and must permit access to its books, records, accounts, other sources of information, and facilities as may be determined by the Recipient or the Department to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a Contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor must so certify to the Recipient, or the Department as appropriate, and must set forth what efforts it has made to obtain the information.
- 3.5. **Sanctions for Noncompliance.** In the event of the Contractor's noncompliance with the nondiscrimination provisions of this Contract, the Recipient must impose such Contract sanctions as it or the Department may

determine to be appropriate, including, but not limited to actions defined in Article 7.1., "Ethics," or Article 5.1., "Authority of Engineer."

- 3.6. **Incorporation of Provisions.** The Contractor must include the provisions of Sections 3.1–3.6 in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The Contractor must take such action with respect to any subcontract or procurement as the Recipient or the Department may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that, in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the Contractor may request the Recipient to enter into such litigation to protect the interests of the Recipient, and, in addition, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

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# Special Provision to Item 000

## Certification of Nondiscrimination in Employment

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### 1. GENERAL

By signing this proposal, the Bidder certifies that it has participated in a previous Contract or subcontract subject to the equal opportunity clause, as required by Executive Order (EO) 10925, 11114, or 11246, or if it has not participated in a previous Contract of this type, or if it has had previous Contracts or subcontracts and has not filed, it will file with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity (EEO), all reports due under the applicable filing requirements.

**Note**—The above certification is required by the EEO Regulations of the Secretary of Labor [41 CFR 60-1.7(b)(1)], and must be submitted by Bidders and proposed subcontractors only in connection with Contracts and subcontracts that are subject to the equal opportunity clause. Contracts and subcontracts that are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only Contracts or subcontracts of \$10,000 or less are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the EOs or their implementing regulations.

Proposed prime Contractors and subcontractors that have participated in a previous Contract or subcontract subject to the EO and have not filed the required reports should note that 41 CFR 60-1.7(b)(1) prevents the award of Contracts and subcontracts unless such Contractor submits a report covering the delinquent period or such other period specified by FHWA or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

# Special Provision to Item 000

## Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)



### 1. GENERAL

#### 1.1. As used in these Specifications:

- “Covered area” means the geographical area described in the solicitation from which this Contract resulted;
- “Director” means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor (DOL), or any person to whom the Director delegates authority;
- “Employer identification number” means the federal Social Security number used on the employer’s quarterly federal tax return, U.S. Treasury Department Form 941; and
- “Minority” includes:
  - Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
  - Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
  - Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
  - American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

1.2. Whenever the Contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it will physically include in each subcontract of more than \$10,000 the provisions of these Specifications and the Notice that contains the applicable goals for minority and female participation that are set forth in the solicitations from which this Contract resulted.

1.3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by DOL in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) will be in conformance with that Plan for those trades that have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or subcontractor participating in an approved Plan is individually required to comply with its obligations under the equal employment opportunity (EEO) clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or subcontractors toward a goal in an approved Plan does not excuse any covered Contractor’s or subcontractor’s failure to take good faith efforts to achieve the Plan goals and timetables.

1.4. The Contractor will implement the specific affirmative action standards provided in Sections 1.7.1.– Section 1.7.16. of this Specification. The goals set forth in the solicitation from which this Contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction Contractors performing Contracts in geographical areas where they do not have a federal or federally assisted construction Contract will apply the minority and female goals established for the geographical area where the Contract is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any OFCCP office

or any federal procurement contracting officer. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

- 1.5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women will excuse the Contractor's obligations under these Specifications, Executive Order (EO) 11246, or the regulations promulgated pursuant thereto.
- 1.6. For the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by DOL.
- 1.7. The Contractor will take specific affirmative actions to ensure EEO. The evaluation of the Contractor's compliance with these Specifications will be based on its effort to achieve maximum results from its actions. The Contractor will document these efforts fully and will implement affirmative action steps at least as extensive as the following.
  - 1.7.1. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor will specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
  - 1.7.2. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
  - 1.7.3. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, recruitment source, or community organization, and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred to the Contractor by the union or, if referred, not employed by the Contractor, this will be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
  - 1.7.4. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement have not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
  - 1.7.5. Develop on-the-job training opportunities or participate in training programs for the area that expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by DOL. The Contractor will provide notice of these programs to the sources compiled under Section 1.7.2.
  - 1.7.6. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in publications such as the company newspaper and annual report; by specifically reviewing the policy with all management personnel and with all minority and female employees at least once annually; and by posting it on bulletin boards accessible to all employees at each location where construction work is performed.
  - 1.7.7. Review, at least annually, the company's EEO policy and affirmative action obligations under these Specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions, including specific review of these items with onsite supervisory personnel such as

superintendents and general foremen, before the initiation of construction work at any jobsite. A written record must be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

- 1.7.8. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and subcontractors with whom the Contractor does or anticipates doing business.
- 1.7.9. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations; to schools with minority and female students; and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than 1 mo. before the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor will send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
- 1.7.10. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after-school, summer, and vacation employment to minority and female youth both onsite and in other areas of a Contractor's workforce.
- 1.7.11. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR 60-3.
- 1.7.12. At least annually, conduct an inventory and evaluation at least of all minority and female personnel for promotional opportunities, and encourage these employees to seek or to prepare for such opportunities through appropriate training or other means.
- 1.7.13. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment-related activities to ensure that the EEO policy and the Contractor's obligations under these Specifications are being carried out.
- 1.7.14. Ensure that all facilities and company activities are non-segregated, except that separate or single-user toilet and necessary changing facilities will be provided to assure privacy between the sexes.
- 1.7.15. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- 1.7.16. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
- 1.8. Contractors are encouraged to participate in voluntary associations that assist in fulfilling one or more of their affirmative action obligations (Sections 1.7.1.–1.7.16. of this Specifications). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant may be asserted as fulfilling any one or more of its obligations under Sections 1.7.1–1.7.16. of this Specification, provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation that demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's, and failure of such a group to fulfill an obligation will not be a defense for the Contractor's noncompliance.
- 1.9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide EEO and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the EO if a particular group is employed in a substantially disparate manner (e.g., even though the Contractor

has achieved its goals for women generally, the Contractor may be in violation of the EO if a specific minority group of women is underused).

- 1.10. The Contractor must not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
- 1.11. The Contractor will not enter into any subcontract with any person or firm debarred from Government Contracts pursuant to EO 11246.
- 1.12. The Contractor will carry out such sanctions and penalties for violation of these Specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to EO 11246, as amended, and its implementing regulations, by OFCCP. Any Contractor who fails to carry out such sanctions and penalties will be in violation of these Specifications and EO 11246, as amended.
- 1.13. The Contractor, in fulfilling its obligations under these Specifications, will implement specific affirmative action steps, at least as extensive as those standards prescribed in Section 1.7 of this Specification, to achieve maximum results from its efforts to ensure EEO. If the Contractor fails to comply with the requirements of the EO, the implementing regulations, or these Specifications, the Director will proceed in accordance with 41 CFR 60-4.8.
- 1.14. The Contractor will designate a responsible official to monitor all employment-related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records must at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, Social Security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records must be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, Contractors will not be required to maintain separate records.
- 1.15. Nothing herein provided will be construed as a limitation on the application of other laws that establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).
- 1.16. In addition to the reporting requirements set forth elsewhere in this Contract, the Contractor and the subcontractors holding subcontracts, not including material suppliers, of \$10,000 or more, will submit for every month of July during which work is performed, employment data as contained under Form PR 1391 (Appendix C to 23 CFR 230), and in conformance with the included instructions.

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# Special Provision to Item 000

## On-the-Job Training Program

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### 1. DESCRIPTION

The primary objective of this Special Provision is the training and advancement of minorities, women, and economically disadvantaged persons toward journeyworker status. Accordingly, make every effort to enroll minority, women, and economically disadvantaged persons to the extent that such persons are available within a reasonable area of recruitment. This training commitment is not intended to, and will not be used to, discriminate against any applicant for training, whether he or she is a member of a minority group or not.

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### 2. TRAINEE ASSIGNMENT

Training assignments are based on the past volume of State-let highway construction Contracts awarded with the Department. Contractors meeting the selection criteria will be notified of their training assignment at the beginning of the reporting year by the Department's Civil Rights Division.

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### 3. PROGRAM REQUIREMENTS

Fulfill all the requirements of the On-the-Job Training Program, including the maintenance of records and submittal of periodic reports documenting program performance. Trainees will be paid at least 60% of the appropriate minimum journeyworker's rate specified in the Contract for the first half of the training period, 75% for the third quarter, and 90% for the last quarter, respectively.

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### 4. REIMBURSEMENT

If requested, Contractors may be reimbursed \$0.80 per training hour at no additional cost to the Department. Training may occur on this project, all other Department Contracts, or locally administered federal aid projects with concurrence of the local government entity. However, reimbursement for training is not available on projects to the extent that such projects do not contain federal funds.

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### 5. COMPLIANCE

The Contractor will have fulfilled the contractual responsibilities by having provided acceptable training to the number of trainees specified in their goal assignment. Noncompliance may be cause for corrective and appropriate measures in accordance with Article 8.7., "Default of Contract," which may be used to comply with the sanctions for noncompliance pursuant to 23 CFR 230.

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## Special Provision 000

# Cargo Preference Act Requirements in Federal Aid Contracts



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### 1. DESCRIPTION

All recipients of federal financial assistance are required to comply with the U.S. Department of Transportation's Cargo Preference Act requirements, 46 CFR 381, "Use of United States-Flag Vessels."

This requirement applies to material or equipment that is acquired specifically for a federal-aid highway project. It is not applicable to goods or materials that come into inventories independent of an FHWA-funded Contract.

When oceanic shipments are necessary for materials or equipment acquired for a specific federal-aid construction project, the Contractor agrees to:

- use privately owned United States-flag commercial vessels to ship at least 50% 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 this Contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels;
- furnish a legible copy of a rated, onboard commercial ocean bill of lading in English for each shipment of cargo described in Paragraph (b)(1) of 46 CFR 381, Section 7, "Federal Grant, Guaranty, Loan and Advance of Funds Agreements," within 20 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, to both the Engineer (through the prime Contractor in the case of subcontractor bills of lading) and to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590; and
- insert the substance of the provisions of this clause in all subcontracts issued pursuant to this Contract.

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# Special Provision 000

## Important Notice to Contractors

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### 1. GENERAL

In accordance with Texas Transportation Code §223.012, the Engineer will evaluate Contractor performance based on quality, safety, and timeliness of the project.

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### 2. DEFINITIONS

- 2.1. **Project Recovery Plan (PRP).** A formal, enforceable plan developed by the Contractor, in consultation with the District, that documents the cause of noted quality, safety, and timeliness issues and specifies how the Contractor proposes to correct project-specific performance deficiencies.

In accordance with 43 TAC §9.23, the District will request a PRP if the Contractor's performance on a project is below the Department's acceptable standards and will monitor the Contractor's compliance with the established plan.

- 2.2. **Corrective Action Plan (CAP).** A formal, enforceable plan developed by the Contractor, and proposed for adoption by the Construction Division or Maintenance Division, that documents the cause of noted quality, safety, and timeliness issues and specifies how the Contractor proposes to correct statewide performance deficiencies.

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### 3. CONTRACTOR EVALUATIONS

In accordance with 43 TAC §9.23, the Engineer will schedule evaluations at the following intervals, at minimum:

- interim evaluations at or within 30 days after the anniversary of the Notice to Proceed, for Contracts extending beyond 1 yr. and
- final evaluation, upon project closeout.

In case of a takeover agreement, neither the Surety nor its performing Contractor will be evaluated.

In addition to regularly scheduled evaluations, the Engineer may schedule an interim evaluation at any time to formally communicate issues with quality, safety, or timeliness. Upon request, work with the Engineer to develop a PRP to document expectations for correcting deficiencies.

Comply with the PRP as directed. Failure to comply with the PRP may result in additional remedial actions available to the Engineer under Item 5, "Control of the Work." Failure to meet a PRP to the Engineer's satisfaction may result in immediate referral to the Performance Review Committee for consideration of further action against the Contractor.

The Engineer will consider and document any events outside the Contractor's control that contributed to the failure to meet performance standards or comply with a PRP, including consideration of sufficient time.

Follow the escalation ladder if there is a disagreement regarding an evaluation or disposition of a PRP. The Contractor may submit additional documentation pertaining to the dispute. The District Engineer's decision on a Contractor's evaluation score and recommendation of action required in a PRP or follow-up for noncompliance is final.

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**4. DIVISION OVERSIGHT**

Upon request of the Construction Division or Maintenance Division, develop and submit for Division approval a proposed CAP to document expectations for correcting deficiencies in the performance of projects statewide.

Comply with the CAP as directed. The CAP may be modified at any time up to completion or resolution after written approval of the premise of change from the Division. Failure to meet an adopted or revised adopted CAP to the Division's satisfaction within 120 days will result in immediate referral to the Performance Review Committee for consideration of further action against the Contractor.

The Division will consider and document any events outside the Contractor's control that contributed to the failure to meet performance standards or comply with a CAP, including consideration of sufficient time and associated costs as appropriate.

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**5. PERFORMANCE REVIEW COMMITTEE**

The Performance Review Committee, in accordance with 43 TAC §9.24, will review at minimum all final evaluations, history of compliance with PRPs, any adopted CAPs including agreed modifications, any information about events outside a Contractor's control contributing to the Contractor's performance, and any documentation submitted by the Contractor and may recommend one or more of the following actions:

- take no action,
- reduce the Contractor's bidding capacity,
- prohibit the Contractor from bidding on one or more projects,
- immediately suspend the Contractor from bidding for a specified period of time, by reducing the Contractor's bidding capacity to zero, or
- prohibit the Contractor from being awarded a Contract on which they are the apparent low bidder.

The Deputy Executive Director will determine any further action against the Contractor.

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**6. APPEALS PROCESS**

In accordance with 43 TAC §9.25, the Contractor may appeal remedial actions determined by the Deputy Executive Director.

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# Special Provision 000

## Certificate of Interested Parties (Form 1295)

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Submit Form 1295, "Certificate of Interested Parties," in the following instances:

- at Contract execution for Contracts awarded by the Commission,
- at Contract execution for Contracts awarded by the District Engineer or Chief Engineer with an award amount of \$1 million or more,
- at any time an existing Contract awarded by the District Engineer or Chief Engineer increases in value to \$1 million or more because of changes in the Contract,
- at any time there is an increase of \$1 million or more to an existing Contract (e.g., change orders, extensions, and renewals), and
- at any time there is a change to the information in Form 1295, when the form was filed for an existing Contract.

Form 1295 and instructions for completing and filing the form are available on the Texas Ethics Commission website.

# Special Provision 000

## Important Notice to Contractors



**Table 1**  
**Daily Contract Administration Liquidated Damages**

For Dollar Amount of Original Contract		Dollar Amount of Daily Contract Administration Liquidated Damages per Working Day
From More Than	To and Including	
0	1,000,000	618
1,000,000	3,000,000	832
3,000,000	5,000,000	940
5,000,000	15,000,000	1,317
15,000,000	25,000,000	1,718
25,000,000	50,000,000	2,411
50,000,000	Over 50,000,000	4,265

In addition to the amount shown in Table 1, the liquidated damages will be increased by the amount shown in Item 8 of the General Notes for Road User Cost (RUC), when applicable.

# Special Provision to Item 000

## Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)



### 1. GENERAL

In addition to the affirmative action requirements of the Special Provision titled “Standard Federal Equal Employment Opportunity Construction Contract Specifications” as set forth elsewhere in this proposal, the Bidder’s attention is directed to the specific requirements for use of minorities and females as set forth below.

### 2. GOALS

Goals for minority and female participation are hereby established in accordance with 41 CFR 60-4.

The goals for minority and female participation expressed in percentage terms for the Contractor’s aggregate workforce in each trade on all construction work in the covered area are as follows:

Goals for Minority Participation in Each Trade (%)	Goals for Female Participation in Each Trade (%)
See Table 1	6.9

These goals are applicable to all the Contractor’s construction work (whether it is federal or federally assisted or not) performed in the covered area. If the Contractor performs construction work in a geographical area located outside the covered area, it will apply the goals established for such geographical area where the work is actually performed. Regarding this second area, the Contractor also is subject to the goals for both its federally involved and non-federally involved construction. The Contractor’s compliance with the Executive Order (EO) and the regulations in 41 CFR 60-4 will be based on its implementation of the Standard Federal Equal Employment Opportunity Construction Contract Specifications Special Provision and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the Contract, and in each trade, and the Contractor must make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority and female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor’s goals will be a violation of the Contract, the EO, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

The overall good performance of other Contractors and subcontractors toward a goal in an approved plan does not excuse any covered Contractor’s or subcontractor’s failure to make good faith efforts to achieve the goals contained in these provisions. Contractors or subcontractors participating in the plan must be able to demonstrate their participation and document their compliance with the provisions of this plan.

### 3. SUBCONTRACTING

The Contractor must provide written notification to the Department within 10 working days of award of any construction subcontract more than \$10,000 at any tier for construction work under the Contract resulting from this solicitation pending concurrence of the Department in the award. The notification will list the names, address, and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and geographical area in which the Contract is to be performed.

**4. COVERED AREA**

As used in this Special Provision, and in the Contract resulting from this solicitation, the geographical area covered by these goals for female participation is the State of Texas. The geographical area covered by these goals for other minorities comprises the counties in the State of Texas as indicated in Table 1.

**5. REPORTS**

The Contractor is hereby notified that he may be subject to the Office of Federal Contract Compliance Programs (OFCCP) reporting and recordkeeping requirements as provided for under EO 11246 as amended. OFCCP will provide direct notice to the Contractor as to the specific reporting requirements that it will be expected to fulfill.

**Table 1  
Goals for Minority Participation**

<b>County</b>	<b>Participation, %</b>	<b>County</b>	<b>Participation, %</b>
Anderson	22.5	Chambers	27.4
Andrews	18.9	Cherokee	22.5
Angelina	22.5	Childress	11.0
Aranas	44.2	Clay	12.4
Archer	11.0	Cochran	19.5
Armstrong	11.0	Coke	20.0
Atascosa	49.4	Coleman	10.9
Austin	27.4	Collin	18.2
Bailey	19.5	Collingsworth	11.0
Bandera	49.4	Colorado	27.4
Bastrop	24.2	Comal	47.8
Baylor	11.0	Comanche	10.9
Bee	44.2	Concho	20.0
Bell	16.4	Cooke	17.2
Bexar	47.8	Coryell	16.4
Blanco	24.2	Cottle	11.0
Borden	19.5	Crane	18.9
Bosque	18.6	Crockett	20.0
Bowie	19.7	Crosby	19.5
Brazoria	27.3	Culberson	49.0
Brazos	23.7	Dallam	11.0
Brewster	49.0	Dallas	18.2
Briscoe	11.0	Dawson	19.5
Brooks	44.2	Deaf Smith	11.0
Brown	10.9	Delta	17.2
Burleson	27.4	Denton	18.2
Burnet	24.2	DeWitt	27.4
Caldwell	24.2	Dickens	19.5
Calhoun	27.4	Dimmit	49.4
Callahan	11.6	Donley	11.0
Cameron	71.0	Duval	44.2
Camp	20.2	Eastland	10.9
Carson	11.0	Ector	15.1
Cass	20.2	Edwards	49.4
Castro	11.0	Ellis	18.2

County	Participation, %	County	Participation, %
El Paso	57.8	Kenedy	44.2
Erath	17.2	Kent	10.9
Falls	18.6	Kerr	49.4
Fannin	17.2	Kimble	20.0
Fayette	27.4	King	19.5
Fisher	10.9	Kinney	49.4
Floyd	19.5	Kleberg	44.2
Foard	11.0	Knox	10.9
Fort Bend	27.3	Lamar	20.2
Franklin	17.2	Lamb	19.5
Freestone	18.6	Lampasas	18.6
Frio	49.4	LaSalle	49.4
Gaines	19.5	Lavaca	27.4
Galveston	28.9	Lee	24.2
Garza	19.5	Leon	27.4
Gillespie	49.4	Liberty	27.3
Glasscock	18.9	Limestone	18.6
Goliad	27.4	Lipscomb	11.0
Gonzales	49.4	Live Oak	44.2
Gray	11.0	Llano	24.2
Grayson	9.4	Loving	18.9
Gregg	22.8	Lubbock	19.6
Grimes	27.4	Lynn	19.5
Guadalupe	47.8	Madison	27.4
Hale	19.5	Marion	22.5
Hall	11.0	Martin	18.9
Hamilton	18.6	Mason	20.0
Hansford	11.0	Matagorda	27.4
Hardeman	11.0	Maverick	49.4
Hardin	22.6	McCulloch	20.0
Harris	27.3	McLennan	20.7
Harrison	22.8	McMullen	49.4
Hartley	11.0	Medina	49.4
Haskell	10.9	Menard	20.0
Hays	24.1	Midland	19.1
Hemphill	11.0	Milam	18.6
Henderson	22.5	Mills	18.6
Hidalgo	72.8	Mitchell	10.9
Hill	18.6	Montague	17.2
Hockley	19.5	Montgomery	27.3
Hood	18.2	Moore	11.0
Hopkins	17.2	Morris	20.2
Houston	22.5	Motley	19.5
Howard	18.9	Nacogdoches	22.5
Hudspeth	49.0	Navarro	17.2
Hunt	17.2	Newton	22.6
Hutchinson	11.0	Nolan	10.9
Irion	20.0	Nueces	41.7
Jack	17.2	Ochiltree	11.0
Jackson	27.4	Oldham	11.0
Jasper	22.6	Orange	22.6
Jeff Davis	49.0	Palo Pinto	17.2
Jefferson	22.6	Panola	22.5
Jim Hogg	49.4	Parker	18.2
Jim Wells	44.2	Parmer	11.0
Johnson	18.2	Pecos	18.9
Jones	11.6	Polk	27.4
Karnes	49.4	Potter	9.3
Kaufman	18.2	Presidio	49.0
Kendall	49.4	Randall	9.3

County	Participation, %	County	Participation, %
Rains	17.2	Reagan	20.0
Real	49.4	Throckmorton	10.9
Red River	20.2	Titus	20.2
Reeves	18.9	Tom Green	19.2
Refugio	44.2	Travis	24.1
Roberts	11.0	Trinity	27.4
Robertson	27.4	Tyler	22.6
Rockwall	18.2	Upshur	22.5
Runnels	20.0	Upton	18.9
Rusk	22.5	Uvalde	49.4
Sabine	22.6	Val Verde	49.4
San Augustine	22.5	Van Zandt	17.2
San Jacinto	27.4	Victoria	27.4
San Patricio	41.7	Walker	27.4
San Saba	20.0	Waller	27.3
Schleicher	20.0	Ward	18.9
Scurry	10.9	Washington	27.4
Shackelford	10.9	Webb	87.3
Shelby	22.5	Wharton	27.4
Sherman	11.0	Wheeler	11.0
Smith	23.5	Wichita	12.4
Somervell	17.2	Wilbarger	11.0
Starr	72.9	Willacy	72.9
Stephens	10.9	Williamson	24.1
Sterling	20.0	Wilson	49.4
Stonewall	10.9	Winkler	18.9
Sutton	20.0	Wise	18.2
Swisher	11.0	Wood	22.5
Tarrant	18.2	Yoakum	19.5
Taylor	11.6	Young	11.0
Terrell	20.0	Zapata	49.4
Terry	19.5	Zavala	49.4

# Special Provision to Item 000

## Disadvantaged Business Enterprise in Federal-Aid Contracts



### 1. DESCRIPTION

The purpose of this Special Provision is to carry out the U.S. Department of Transportation's (DOT) policy of ensuring nondiscrimination in the award and administration of DOT-assisted Contracts and creating a level playing field on which firms owned and controlled by individuals who are determined to be socially and economically disadvantaged can compete fairly for DOT-assisted Contracts.

### 2. DISADVANTAGED BUSINESS ENTERPRISE IN FEDERAL-AID CONTRACTS

2.1. **Policy.** It is the policy of the DOT and the Texas Department of Transportation (Department) that DBEs, as defined in 49 CFR Part 26, Subpart A, and the Department's DBE Program, will have the opportunity to participate in the performance of Contracts financed in whole or in part with federal funds. The DBE requirements of 49 CFR Part 26, and the Department's DBE Program, apply to this Contract as follows.

The Contractor must solicit DBEs through reasonable and available means, as defined in 49 CFR Part 26, Appendix A, and the Department's DBE Program, or show a good faith effort to meet the DBE goal for this Contract.

The Contractor, subrecipient, or subcontractor will not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. Carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted Contracts. Failure 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 Department deems appropriate.

The requirements of this Special Provision must be physically included in any subcontract.

By signing the Contract proposal, the Bidder is certifying that the DBE goal as stated in the proposal will be met by obtaining commitments from eligible DBEs or that the Bidder will provide acceptable evidence of good faith effort to meet the commitment.

#### 2.2. Definitions.

2.2.1. **Administrative Reconsideration.** A process by which the low bidder may request reconsideration when the Department determines the good faith effort (GFE) requirements have not been met.

2.2.2. **Commercially Useful Function (CUF).** A CUF occurs when a DBE has the responsibility for the execution of the work and carrying out such responsibilities by actually performing, managing, and supervising the work.

2.2.3. **Disadvantaged Business Enterprise (DBE).** A for-profit small business certified through the Texas Unified Certification Program in accordance with 49 CFR Part 26, that is at least 51% owned by one or more socially and economically disadvantaged individuals, or in the case of a publicly owned business, in which is at least 51% of the stock is owned by one or more socially and economically disadvantaged individuals, and whose management and daily business operations are controlled by one or more of the individuals who own it.

- 2.2.4. **DBE Joint Venture.** An association of a DBE firm and one or more other firms to carry out a single business enterprise for profit for which purpose they combine their property, capital, efforts, skills, and knowledge, and in which the DBE is responsible for a distinct, clearly defined portion of the work of the Contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture are commensurate with its ownership interest.
- 2.2.5. **DOT.** The U.S. Department of Transportation, including the Office of the Secretary, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and the Federal Aviation Administration (FAA).
- 2.2.6. **Federal-Aid Contract.** Any Contract between the Department and a Contractor that is paid for in whole or in part with DOT financial assistance.
- 2.2.7. **Good Faith Effort.** All necessary and reasonable steps to achieve the contract goal which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain enough DBE participation, even if not fully successful. Good faith efforts are evaluated before award and throughout performance of the Contract. For guidance on good faith efforts, see 49 CFR Part 26, Appendix A.
- 2.2.8. **North American Industry Classification System (NAICS).** A designation that best describes the primary business of a firm. The NAICS is described in the North American Industry Classification Manual—United States, which is available on the Internet at the U.S. Census Bureau website:  
<http://www.census.gov/eos/www/naics/>.
- 2.2.9. **Race-Conscious.** A measure or program that is focused specifically on assisting only DBEs, including women-owned businesses.
- 2.2.10. **Race-Neutral DBE Participation.** Any participation by a DBE through customary competitive procurement procedures.
- 2.2.11. **Texas Unified Certification Program (TUCP) Directory.** An online directory listing all DBEs currently certified by the TUCP. The Directory identifies DBE firms whose participation on a Contract may be counted toward achievement of the assigned DBE Contract goal.
- 2.3. **Contractor's Responsibilities.**
- 2.3.1. **DBE Liaison Officer.** Designate a DBE liaison officer who will administer the Contractor's DBE program and who will be responsible for maintenance of records of efforts and contacts made to subcontract with DBEs.
- 2.3.2. **Compliance Tracking System (CTS).** This Contract is subject to electronic Contract compliance tracking. Contractors and DBEs are required to provide any noted and requested Contract compliance-related data electronically in the Department's tracking system. This includes commitments, payments, substitutions, and good faith efforts. Contractors and DBEs are responsible for responding by any noted response date or due date to any instructions or request for information, and to check the system on a regular basis. A Contractor is responsible for ensuring all DBEs have completed all requested items and that their contact information is accurate and up-to-date. The Department may require additional information related to the Contract to be provided electronically through the system at any time before, during, or after contract award. The system is web-based and can be accessed at the following Internet address: <https://txdot.txdotcms.com/>.
- In its sole discretion, the Department may require that contract compliance tracking data be submitted by Contractors and DBEs in an alternative format prescribed by the Department.
- 2.3.3. **Apparent Low Bidder.** The apparent low bidder must submit DBE commitments to satisfy the DBE goal or submit good faith effort Form 2603 and supporting documentation demonstrating why the goal could not be achieved, in whole or part, no later than 5 calendar days after bid opening. The means of transmittal and the

risk of timely receipt of the information will be the bidder's responsibility and no extension of the 5-calendar-day timeframe will be allowed for any reason.

- 2.3.4. **DBE Contractor.** A DBE Contractor may receive credit toward the DBE goal for work performed by its own forces and work subcontracted to DBEs. If a DBE subcontracts to a non-DBE, that information must be reported monthly.

- 2.3.5. **DBE Committal.** Only those DBEs certified by the TUCP are eligible to be used for goal attainment. The Department maintains the TUCP DBE Directory. The Directory can be accessed at the following Internet address: <https://txdot.txdotcms.com/FrontEnd/VendorSearchPublic.asp?TN=txdot&XID=2340>.

A DBE must be certified on the day the commitment is considered and at time of subcontract execution. It is the Contractor's responsibility to ensure firms identified for participation are approved certified DBE firms.

The Bidder is responsible to ensure that all submittals are checked for accuracy. Any and all omissions, deletions, and/or errors that may affect the end result of the commitment package are the sole liabilities of the bidder.

Commitments in excess of the goal are considered race-neutral commitments.

- 2.3.6. **Good Faith Effort Requirements.** A Contractor who cannot meet the Contract goal, in whole or in part, must make adequate good faith efforts to obtain DBE participation as so stated and defined in 49 CFR Part 26, Appendix A.

- 2.3.6.1. **Administrative Reconsideration.** If the Department determines that the apparent low bidder has failed to satisfy the good faith efforts requirement, the Department will notify the Bidder of the failure and will give the Bidder an 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 must request an administrative reconsideration of that determination within 3 days of the date of receipt of the notice. The request must be submitted directly to the Texas Department of Transportation, Civil Rights Division, 125 East 11th Street, Austin, Texas 78701-2483.

If a request for administrative reconsideration is not filed within the period specified the determination made is final and further administrative appeal is barred.

If a reconsideration request is timely received, the reconsideration decision will be made by the Department's DBE liaison officer or, if the DBE liaison officer took part in the original determination, the Department's executive director will appoint a department employee to perform the administrative reconsideration. The employee will hold a senior leadership position and will report directly to the executive director.

The meeting or written documentation must be provided or held within 7 days of the date the request was submitted.

The Department will provide to the Bidder a written decision if the Bidder did or did not make adequate good faith efforts to meet the Contract goal. The reconsideration decision is final and is not administratively appealed to DOT.

- 2.3.7. **Determination of DBE Participation.** The work performed by the DBE must be reasonably construed to be included in the work area and NAICS work code identified by the Contractor in the approved commitment.

Participation by a DBE on a Contract will not be counted toward DBE goals until the amount of the participation has been paid to the DBE.

Payments made to a DBE that was not on the original commitment may be counted toward the Contract goal if that DBE was certified as a DBE before the execution of the subcontract and has performed a Commercially Useful Function.

The total amount paid to the DBE for work performed with its own forces is counted toward the DBE goal. When a DBE subcontracts part of the work of its Contract to another firm, the value of the subcontracted work may be counted toward DBE goals only if the subcontractor is itself a DBE.

DBE Goal credit for the DBE subcontractors leasing of equipment or purchasing of supplies from the Contractor or its affiliates is not allowed. Project materials or supplies acquired from an affiliate of the Contractor cannot directly or indirectly (second or lower tier subcontractor) be used for DBE goal credit.

If a DBE firm is declared ineligible due to DBE decertification after the execution of the DBE's subcontract, the DBE firm may complete the work and the DBE firm's participation will be counted toward the Contract goal. If the DBE firm is decertified before the DBE firm has signed a subcontract, the Contractor is obligated to replace the ineligible DBE firm or demonstrate that it has made good faith efforts to do so.

The Contractor may count 100% of its expenditure to a DBE manufacturer. According to 49 CFR 26.55(e)(1)(i), a DBE manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the Contract and of the general character described by the specifications.

The Contractor may count only 60% of its expenditure to a DBE regular dealer. According to 49 CFR 26.55(e)(2)(i), a DBE regular dealer is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles, or equipment of the general character described by the specifications and required under the Contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. A firm may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business if the firm both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment must be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis. A long-term lease with a third-party transportation company is not eligible for 60% goal credit.

With respect to materials or supplies purchased from a DBE that is neither a manufacturer nor a regular dealer, the Contractor may count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a jobsite.

A Contractor may count toward its DBE goal a portion of the total value of the Contract amount paid to a DBE joint venture equal to the distinct, clearly defined portion of the work of the Contract performed by the DBE.

- 2.3.8. **Commercially Useful Function.** It is the Contractor's obligation to ensure that each DBE used on federal-assisted contracts performs a commercially useful function on the Contract.

The Department will monitor performance during the Contract to ensure each DBE is performing a CUF.

Under the terms established in 49 CFR 26.55, a DBE performs a CUF when it is responsible for execution of the work of the Contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved.

With respect to material and supplies used on the Contract, a DBE must be responsible for negotiating price, determining quality and quantity, ordering the material, installing the material, if applicable, and paying for the material itself.

With respect to trucking, the DBE trucking firm must own and operate at least one fully licensed, insured, and operational truck used on the Contract. The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the Contract. The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE that leases trucks equipped with drivers from a non-DBE is entitled to credit for the total value of transportation services provided by non-DBE leased trucks equipped with drivers not to exceed the value of transportation services on the Contract provided by DBE-owned trucks or leased trucks with DBE employee drivers. Additional participation by non-DBE owned trucks equipped with drivers receives credit only for the fee or commission it receives as a result of the lease arrangement.

A DBE does not perform a CUF when its role is limited to that of an extra participant in a transaction, Contract, or project through which funds are passed to obtain the appearance of DBE participation. The Department will evaluate similar transactions involving non-DBEs to determine whether a DBE is an extra participant.

If a DBE does not perform or exercise responsibility for at least 30% of the total cost of its Contract with its own work force, or the DBE subcontracts a greater portion of the work than would be expected on the basis of normal industry practice for the type of work involved, the Department will presume that the DBE is not performing a CUF.

If the Department determines that a DBE is not performing a CUF, no work performed by such DBE will count as eligible participation. The denial period of time may occur before or after a determination has been made by the Department.

In case of the denial of credit for non-performance of a CUF, the Contractor will be required to provide a substitute DBE to meet the Contract goal or provide an adequate good faith effort when applicable.

- 2.3.8.1. **Rebuttal of a Finding of No Commercially Useful Function.** Consistent with the provisions of 49 CFR 26.55(c)(4)&(5), before the Department makes a final finding that no CUF has been performed by a DBE, the Department will notify the DBE and provide the DBE the opportunity to provide rebuttal information.

CUF determinations are not subject to administrative appeal to DOT.

- 2.3.9. **Joint Check.** The use of joint checks between a Contractor and a DBE is allowed with Department approval. To obtain approval, the Contractor must submit a completed Form 2178, "DBE Joint Check Approval," to the Department.

The Department will closely monitor the use of joint checks to ensure that such a practice does not erode the independence of the DBE nor inhibit the DBE's ability to perform a CUF. When joint checks are used, DBE credit toward the Contract goal will be allowed only when the subcontractor is performing a CUF in accordance with 49 CFR 26.55(c)(1).

Long-term or open-ended joint checking arrangements may be a basis for further scrutiny and may result in the lack of participation towards the Contract goal requirement if DBE independence cannot be established.

Joint checks will not be allowed simply for the convenience of the Contractor.

If the proper procedures are not followed or the Department determines that the arrangements result in a lack of independence for the DBE involved, no credit for the DBE's participation as it relates to the material cost will be used toward the Contract goal requirement, and the Contractor will need to make up the difference elsewhere on the project.

- 2.3.10. **DBE Termination and Substitution.** No DBE named in the commitment submitted under Section 2.3.5. will be terminated for convenience, in whole or part, without the Department's approval. This includes, but is not

limited to, instances in which a Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

Unless consent is provided, the Contractor will not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

The Contractor, before submitting its request to terminate, must first give written notice to the DBE of its intent to terminate and the reason for the termination. The Contractor will copy the Department on the Notice of Intent to terminate.

The DBE has 5 calendar days to respond to the Contractor's notice and will advise the Contractor and the Department of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Department should not approve the prime Contractor's request for termination.

The Department may provide a shorter response time if required in a particular case as a matter of public necessity.

The Department will consider both the Contractor's request and DBE's stated position before approving the request. The Department may provide a written approval only if it agrees, for reasons stated in its concurrence document, that the Contractor has good cause to terminate the DBE. If the Department does not approve the request, the Contractor must continue to use the committed DBE firm in accordance with the Contract. For guidance on what good cause includes, see 49 CFR 26.53.

Good cause does not exist if the Contractor seeks to terminate, reduce, or substitute a DBE it relied upon to obtain the Contract so that the Contractor can self-perform the work for which the DBE firm was engaged.

When a DBE subcontractor is terminated, make good faith efforts to find, as a substitute for the original DBE, another DBE to perform, at least to the extent needed to meet the established Contract goal, the work that the original DBE was to have performed under the Contract.

Submit the completed Form 2228, "DBE Termination Substitution Request," within seven (7) days, which may be extended for an additional 7 days if necessary at the request of the Contractor. The Department will provide a written determination to the Contractor stating whether or not good faith efforts have been demonstrated. If the Department determines that good faith efforts were not demonstrated, the Contractor will have the opportunity to appeal the determination to the Civil Rights Division.

- 2.3.11. **Reports and Records.** By the 15th of each month and after work begins, report payments to meet the DBE goal and for DBE race-neutral participation on projects with or without goals. These payment reports will be required until all DBE subcontracting or material supply activity is completed. Negative payment reports are required when no activity has occurred in a monthly period.

Notify the Area Engineer if payment to any DBE subcontractor is withheld or reduced.

Before receiving final payment from the Department, the Contractor must indicate a final payment on the compliance tracking system. The final payment is a summary of all payments made to the DBEs on the project.

All records must be retained for a period of 3 years following completion of the Contract work, and must be available at reasonable times and places for inspection by authorized representatives of the Department or the DOT. Provide copies of subcontracts or agreements and other documentation upon request.

- 2.3.12. **Failure to Comply.** If the Department determines the Contractor has failed to demonstrate good faith efforts to meet the assigned goal, the Contractor will be given an opportunity for reconsideration by the Department.

A Contractor's failure to comply with the requirements of this Special Provision will constitute a material breach of this Contract. In such a case, the Department reserves the right to terminate the Contract; to deduct the amount of DBE goal not accomplished by DBEs from the money due or to become due the Contractor; or to secure a refund, not as a penalty but as liquidated damages, to the Department or such other remedy or remedies as the Department deems appropriate.

2.3.13. **Investigations.** The Department may conduct reviews or investigations of participants as necessary. All participants, including, but not limited to, DBEs and complainants using DBE Subcontractors to meet the Contract goal, are required to cooperate fully and promptly with compliance reviews, investigations, and other requests for information.

2.3.14. **Falsification and Misrepresentation.** If the Department determines that a Contractor or subcontractor was a knowing and willing participant in any intended or actual subcontracting arrangement contrived to artificially inflate DBE participation or any other business arrangement determined by the Department to be unallowable, or if the Contractor engages in repeated violations, falsification, or misrepresentation, the Department may:

- refuse to count any fraudulent or misrepresented DBE participation;
- withhold progress payments to the Contractor commensurate with the violation;
- reduce the Contractor's prequalification status;
- refer the matter to the Office of Inspector General of the US Department of Transportation for investigation; and/or
- seek any other available contractual remedy.

# Special Provision to Item 6

## Control of Materials



Item 6, "Control of Materials" of the Standard Specifications is amended with respect to the clauses cited below. No other clauses or requirements of this Item are waived or changed.

**Section 1.1. "Buy America," and Section 1.2., "Buy America Exceptions,"** are voided and replaced by the following.

- 1.1. **Buy America.** Comply with the latest provisions of Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law and applicable CFR, which restrict funds being made available from Federal financial assistance programs unless all the iron products, steel products, manufactured products, and construction materials used in the project are produced in the United States. Use iron or steel products, manufactured products, or construction materials produced in the United States for all permanently installed materials and products except when defined in Section 1.1.5., "Buy America Exceptions."

A material is solely classified based on its status at the time it is brought to the work site as either an iron or steel product, construction material, manufactured product, or Section 70917(c) material. Refer to the Buy America Material Classification Sheet found in the general notes or [txdot.gov](http://txdot.gov) for additional clarification on material classification.

- 1.1.1. **Iron or Steel.** Iron or steel products means articles, materials, or supplies that consist of iron or steel or a combination of both. For iron or steel products, manufacturing includes any process that modifies the chemical content, physical shape or size, or final finish of a product. The manufacturing process begins with initial melting and mixing and continues through fabrication (e.g., cutting, drilling, welding, bending.) and coating (e.g., paint, galvanizing, epoxy).

For iron or steel products, submit a notarized original FORM D-9-USA-1 (Department Form 1818) with the proper attachments for verification of compliance.

- 1.1.2. **Section 70917(c) Materials.** Section 70917(c) materials mean cement and cementitious material; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives. Section 70917(c) materials do not require domestic sourcing or Buy America certification.

- 1.1.3. **Construction Materials.** Construction materials are classified as articles, materials, or supplies that consist of only one of the items listed in bullets below. Minor additions (as determined by the plans or the Engineer) to any of the items listed is still a construction material.

- non-ferrous metals,
- plastic and polymer-based products (including polyvinyl chloride, composite building materials, and polymers used in fiber optic cables),
- glass (including optic glass),
- fiber optic cable (including drop cable),
- optical fiber,
- lumber,
- engineered wood, or
- drywall.

For construction materials, submit a Construction Material Buy America Certification Form (Department Form 2806) for verification of compliance that all manufacturing processes, as required, occurred in the

United States. Each construction material has specific certification requirements stated below. Provide additional documentation as requested.

Details shown on the plans provide additional clarification on Buy America requirements.

For non-ferrous metals, certification requires all manufacturing processes, from initial smelting or melting through final shaping, coating, and assembly, occurred in the United States.

For plastic and polymer-based products (including polyvinyl chloride, composite building materials, and polymers used in fiber optic cables), certification requires all manufacturing processes, from initial combination of constituent plastic or polymer-based inputs, or, where applicable, constituent composite materials, until the item is in its final form, occurred in the United States.

For glass (including optic glass), certification requires all manufacturing processes, from initial batching and melting of raw materials through annealing, cooling, and cutting, occurred in the United States.

For fiber optic cable (including drop cable), certification requires all manufacturing processes, from the initial ribboning (if applicable), through buffering, fiber stranding and jacketing, occurred in the United States. All manufacturing processes also include the standards for glass and optical fiber, but not for non-ferrous metals, plastic and polymer-based products, or any others.

For optical fiber, certification requires all manufacturing processes, from the initial preform fabrication stage through the completion of the draw, occurred in the United States.

For lumber, certification requires all manufacturing processes, from initial debarking through treatment and planing, occurred in the United States.

For engineered wood, certification requires all manufacturing processes from the initial combination of constituent materials until the wood product is in its final form, occurred in the United States.

For drywall, certification requires all manufacturing processes, from initial blending of mined or synthetic gypsum plaster and additives through cutting and drying of sandwiched panels, occurred in the United States.

1.1.4. **Manufactured Products.** Materials classified as a manufactured product are currently waived from Buy America requirements by an FHWA general waiver and are not required to be domestically sourced. However, iron or steel products incorporated into manufactured products must meet iron and steel compliance requirements.

1.1.5. **Buy America Exceptions.** Use of iron, steel, construction materials, and manufactured products manufactured in the United States is required unless the material meets an exception below.

- A waiver exists exempting the material from Buy America compliance.
- The total value of the non-compliant products (other than iron or steel products) is no more than the lesser of \$1,000,000 or 5% of Total Applicable Costs for the project. Total Applicable Cost means the actual cost of all materials requiring Buy America compliance including iron, steel, or other materials that are within the scope of existing waivers. Contractor must provide documentation showing under threshold in advance for Engineer's consideration.
- The total value of foreign iron and steel products, including delivery, does not exceed 0.1% of the total Contract cost or \$2,500, whichever is greater. The Contractor must provide documentation showing under threshold in advance for the Engineer's consideration.
- Foreign steel may be allowed when the Contract contains an alternate item for a foreign source iron or steel product and the Contract is awarded based on the alternate item.

- The materials are temporarily installed or are supplies, tools, and equipment not incorporated into the project. Temporarily installed means the materials and products must be removed at the end of the project or may be removed at the Contractor's convenience with the Engineer's approval.

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# Special Specification 7018

## Diesel Electric Ferry

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### 1. DESCRIPTION

Furnish materials, equipment, labor, and allowance necessary for the construction of a 70-car Diesel Electric Ferry, as shown in the plans and in the technical Specifications.

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### 2. MATERIALS AND CONSTRUCTION METHODS

Furnish materials furnished and use construction methods in conformance with the plans, details, and the technical Specifications, as well as governing bodies including the American Bureau of Shipping and the U.S. Coast Guard. The Contractor is required to perform a schedule of values for work classifications, as provided in the project manual.

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### 3. MEASUREMENT

This item will be measured on the percentage of work completed and materials stored corresponding to the schedule of values for each work classification.

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### 4. PAYMENT

Payment for this item will be made on a percentage of work completed and materials stored corresponding to the schedule of values work classification.