INSTRUCTIONS

ABOUT IDOT PROPOSALS: All proposals are potential bidding proposals. Each proposal contains all certifications and affidavits, a proposal signature sheet and a proposal bid bond.

PREQUALIFICATION

Any contractor who desires to become pre-qualified to bid on work advertised by IDOT must submit the properly completed pre-qualification forms to the Bureau of Construction no later than 4:30 p.m. prevailing time twenty-one days prior to the letting of interest. This pre-qualification requirement applies to first time contractors, contractors renewing expired ratings, contractors maintaining continuous pre-qualification or contractors requesting revised ratings. To be eligible to bid, existing pre-qualification ratings must be effective through the date of letting.

WHO CAN BID ?

Bids will be accepted from only those companies that request and receive written Authorization to Bid from IDOT's Central Bureau of Construction. This does not apply to Small Business Set-Asides.

REQUESTS FOR AUTHORIZATION TO BID

Contractors wanting to bid on items included in a particular letting must submit the properly completed "Request for Authorization to Bid/or Not For Bid Status" (BDE 124) and the ORIGINAL "Affidavit of Availability" (BC 57) to the proper office no later than 4:30 p.m. prevailing time, three (3) days prior to the letting date. This does not apply to Small Business Set-Asides.

WHAT CONSTITUTES WRITTEN AUTHORIZATION TO BID?: When a prospective prime bidder submits a "Request for Authorization to Bid/or Not For Bid Status"(BDE 124) he/she must indicate at that time which items are being requested For Bidding purposes. Only those items requested For Bidding will be analyzed. After the request has been analyzed, the bidder will be issued an **Authorization to Bid or Not for Bid Report**, approved by the Central Bureau of Construction that indicates which items have been approved For Bidding. If **Authorization to Bid** cannot be approved, the **Authorization to Bid or Not for Bid Report** will indicate the reason for denial.

ABOUT AUTHORIZATION TO BID: Firms that have not received an Authorization to Bid or Not For Bid Report within a reasonable time of complete and correct original document submittal should contact the department as to the status. Firms unsure as to authorization status should call the Prequalification Section of the Bureau of Construction at the number listed at the end of these instructions. These documents must be received three days before the letting date.

ADDENDA AND REVISIONS: It is the bidder's responsibility to determine which, if any, addenda or revisions pertain to any project they may be bidding. Failure to incorporate all relevant addenda or revisions may cause the bid to be declared unacceptable.

Each addendum or revision will be included with the Electronic Plans and Proposals. Addenda and revisions will also be placed on the Addendum/Revision Checklist and each subscription service subscriber will be notified by e-mail of each addendum and revision issued.

The Internet is the Department's primary way of doing business. The subscription server e-mails are an added courtesy the Department provides. It is suggested that bidders check IDOT's website at http://www.dot.il.gov/desenv/delett.html before submitting final bid information.

IDOT IS NOT RESPONSIBLE FOR ANY E-MAIL FAILURES.

Addenda questions may be directed to the Plans and Contracts Office at (217)782-7806 or D&Econtracts@dot.il.gov

Technical questions about downloading these files may be directed to Tim Garman at (217)524-1642 or Timothy.Garman@illinois.gov.

BID SUBMITTAL GUIDELINES AND CHECKLIST

In an effort to eliminate confusion and standardize the bid submission process the Contracts Office has created the following guidelines and checklist for submitting bids.

This information has been compiled from questions received from contractors and from inconsistencies noted on submitted bids. If you have additional questions please refer to the contact information listed below.

ABOUT SUBMITTING BIDS: It is recommended that bidders deliver bid proposals in person to ensure they arrive at the proper location prior to the time specified for the receipt of bids. Any proposals received at the place of letting after the time specified will not be read.

STANDARD GUIDELINES FOR SUBMITTING BIDS

- All pages should be single sided.
- Use the Cover Page that is provided in the Bid Proposal (posted on the IDOT Web Site) as the first page of your submitted bid. This page has the Item number in the upper left-hand corner and lines provided for your company name and address in the upper right-hand corner.
- Do not use report covers, presentation folders or special bindings and do not staple multiple times on left side like a book. Use only 1 staple in the upper left hand corner. Make sure all elements of your bid are stapled together including the bid bond or guaranty check (if required).
- Do not include any certificates of eligibility, your authorization to bid, Addendum Letters or affidavit of availability.
- Do not include the Subcontractor Documentation with your bid (pages i – iii and pages a – g). This documentation is required only after you are awarded the contract.
- Use the envelope cover sheet (provided with the proposal) as the cover for the proposal envelope.
- Do not rely on overnight services to deliver your proposal prior to 10 AM on letting day. It will not be read if it is delivered after 10 AM.
- Do not submit your Substance Abuse Prevention Program (SAPP) with your bid. If you are awarded the contract this form is to be submitted to the district engineer at the pre-construction conference.

Use the following checklist to ensure completeness and the correct order in assembling your bid

☐ **Cover page followed by the Pay Items.** If you are using special software or CBID to generate your schedule of prices, do not include the blank schedule of prices.

☐ **Page 4 (Item 9)** – Check "YES" if you will use a subcontractor(s). Include the subcontractor(s) name, address and the dollar amount (if over $25,000). If you will use subcontractor(s) but are uncertain who or the dollar amount; check "YES" but leave the lines blank.

☐ **After page 4, I**nsert your Cost Adjustments for Steel, Bituminous and Fuel (if applicable), and your State Board of Elections certificate of registration.

☐ **Page 10 (Paragraph J)** – Check "YES" or "NO" whether your company has any business in Iran.

☐ **Page 10 (Paragraph K)** – List the Union Local Name and number or certified training programs that you have in place. Do not include certificates with your bid. Keep the certificates in your office in case they are requested by IDOT.

☐ **Page 11 (Paragraph L)** - Insert a copy of your State Board of Elections certificate of registration after page 4 of the bid proposal. Only include the page that has the date stamp on it. Do not include any other certificates or forms showing that you are an Illinois business.

☐ **Page 11 (Paragraph M)** – Indicate if your company has hired a lobbyist in connection with the job for which you are submitting the bid proposal.

☐ **Page 12 (Paragraph C)** – This is a work sheet to determine if a completed Form A is required. It is not part of the form and you do not need to make copies for each Form A that is filled out.

☐ **Pages 14-17 (Form A)** – One Form A (4 pages) is required for each applicable person in your company. Copies of the Forms can be used and only need to be changed when the financial information changes. The certification signature and date must be original for each letting. Do not staple the forms together.

If you answered "NO" to all of the questions in Paragraph C (page 12), complete the first section (page 14) with your company information and then sign and date the Not Applicable statement on page 17.

☐ **Page 18 (Form B)** - If you check "YES" to having other current or pending contracts it is acceptable to use the phrase, "See Affidavit of Availability on file".

☐ **Page 20 (Workforce Projection)** – Be sure to include the Duration of the Project. It is acceptable to use the phrase "Per Contract Specifications".

☐ **Bid Bond –** Submit your bid bond using the current Bid Bond Form provided in the proposal package. The Power of Attorney page should be stapled to the Bid Bond. If you are using an electronic bond, include your bid bond number on the form and attach the Proof of Insurance printed from the Surety 2000 Web Site.

☐ **Disadvantaged Business Utilization Plan and/or Good Faith Effort –** The last item in your bid should be the DBE Utilization Plan (SBE 2026), DBE Participation Statement (SBE 2025) and supporting paperwork. If you have documentation for a Good Faith Effort, it should follow the SBE Forms.

The Bid Letting is now available in streaming Audio/Video from the IDOT Web Site. A link to the stream will be placed on the main page of the current letting on the day of the Letting. The stream will not begin until 10 AM. The actual reading of the bids does not begin until approximately 10:20 AM.

Following the Letting, the As-Read Tabulation of Bids will be posted by the end of the day. You will find the link on the main page of the current letting.

QUESTIONS: pre-letting up to execution of the contract

Contractor/Subcontractor pre-qualification ---------- 217-782-3413
Small Business, Disadvantaged Business Enterprise (DBE) ---------- 217-785-4611
Contracts, Bids, Letting process or Internet downloads ---------- 217-785-0230
Estimates Unit ---------- 217-785-3483

QUESTIONS: following contract execution

Including Subcontractor documentation, payments ---------- 217-782-3413
Railroad Insurance ---------- 217-785-0275

RETURN WITH BID

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Proposal Submitted By **Name**
Address
City

Letting January 20, 2012

NOTICE TO PROSPECTIVE BIDDERS
This proposal can be used for bidding purposes by only those companies that request and receive written AUTHORIZATION TO BID from IDOT's Central Bureau of Construction. This does not apply to Small Business Set-Asides.
BIDDERS NEED NOT RETURN THE ENTIRE PROPOSAL

Notice to Bidders, Specifications, Proposal, Contract and Contract Bond

Illinois Department of Transportation

Springfield, Illinois 62764

Contract No. 76D29
JERSEY County
Section 2I-3
Route FAP 304
Project FBD-0040(011)
District 8 Construction Funds

PLEASE MARK THE APPROPRIATE BOX BELOW:

☐ A Bid Bond is included.

☐ A Cashier's Check or a Certified Check is included

Prepared by

Checked by F

(Printed by authority of the State of Illinois)

Page intentionally left blank

RETURN WITH BID

Illinois Department of Transportation

PROPOSAL

TO THE DEPARTMENT OF TRANSPORTATION

1. Proposal of _____

   _____

Taxpayer Identification Number (Mandatory) _____

for the improvement identified and advertised for bids in the Invitation for Bids as:

Contract No. 76D29
JERSEY County
Section 2I-3
Project FBD-0040(011)
Route FAP 304
District 8 Construction Funds

This project consists of constructing a new ferry barge and pushboat to carry passenger vehicles across the Illinois River at Brussels.

2. The undersigned bidder will furnish all labor, material and equipment to complete the above described project in a good and workmanlike manner as provided in the contract documents provided by the Department of Transportation. This proposal will become part of the contract and the terms and conditions contained in the contract documents shall govern performance and payments.

3. **ASSURANCE OF EXAMINATION AND INSPECTION/WAIVER.** The undersigned further declares that he/she has carefully examined the proposal, plans, specifications, addenda form of contract and contract bond, and special provisions, and that he/she has inspected in detail the site of the proposed work, and that he/she has familiarized themselves with all of the local conditions affecting the contract and the detailed requirements of construction, and understands that in making this proposal he/she waives all right to plead any misunderstanding regarding the same.

4. **EXECUTION OF CONTRACT AND CONTRACT BOND.** The undersigned further agrees to execute a contract for this work and present the same to the department within fifteen (15) days after the contract has been mailed to him/her. The undersigned further agrees that he/she and his/her surety will execute and present within fifteen (15) days after the contract has been mailed to him/her contract bond satisfactory to and in the form prescribed by the Department of Transportation, in the penal sum of the full amount of the contract, guaranteeing the faithful performance of the work in accordance with the terms of the contract.

5. **PROPOSAL GUARANTY.** Accompanying this proposal is either a bid bond on the department form, executed by a corporate surety company satisfactory to the department, or a proposal guaranty check consisting of a bank cashier's check or a properly certified check for not less than 5 per cent of the amount bid or for the amount specified in the following schedule:

Amount of Bid			Proposal Guaranty	Amount of Bid			Proposal Guaranty
Up to		$5,000	$150	$2,000,000	to	$3,000,000	$100,000
$5,000	to	$10,000	$300	$3,000,000	to	$5,000,000	$150,000
$10,000	to	$50,000	$1,000	$5,000,000	to	$7,500,000	$250,000
$50,000	to	$100,000	$3,000	$7,500,000	to	$10,000,000	$400,000
$100,000	to	$150,000	$5,000	$10,000,000	to	$15,000,000	$500,000
$150,000	to	$250,000	$7,500	$15,000,000	to	$20,000,000	$600,000
$250,000	to	$500,000	$12,500	$20,000,000	to	$25,000,000	$700,000
$500,000	to	$1,000,000	$25,000	$25,000,000	to	$30,000,000	$800,000
$1,000,000	to	$1,500,000	$50,000	$30,000,000	to	$35,000,000	$900,000
$1,500,000	to	$2,000,000	$75,000	over		$35,000,000	$1,000,000

Bank cashier's checks or properly certified checks accompanying proposals shall be made payable to the Treasurer, State of Illinois, when the state is awarding authority; the county treasurer, when a county is the awarding authority; or the city, village, or town treasurer, when a city, village, or town is the awarding authority.

If a combination bid is submitted, the proposal guaranties which accompany the individual proposals making up the combination will be considered as also covering the combination bid.

The amount of the proposal guaranty check is _____ $( ). If this proposal is accepted and the undersigned shall fail to execute a contract bond as required herein, it is hereby agreed that the amount of the proposal guaranty shall become the property of the State of Illinois, and shall be considered as payment of damages due to delay and other causes suffered by the State because of the failure to execute said contract and contract bond; otherwise, the bid bond shall become void or the proposal guaranty check shall be returned to the undersigned.

Attach Cashier's Check or Certified Check Here

In the event that one proposal guaranty check is intended to cover two or more proposals, the amount must be equal to the sum of the proposal guaranties which would be required for each individual proposal. If the guaranty check is placed in another proposal, state below where it may be found.

The proposal guaranty check will be found in the proposal for:

Item _____

Section No. _____

County _____

Mark the proposal cover sheet as to the type of proposal guaranty submitted.

ILLINOIS DEPARTMENT OF TRANSPORTATION
SCHEDULE OF PRICES
CONTRACT NUMBER - 76D29

State Job # - C-98-003-12
PPS NBR - 8-00742-0000
County Name - JERSEY- -
Code - 83 - -
District - 8 - -
Section Number - 2I-3

Project Number FBD-0040/011/

Route FAP 304

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
X0327359	BARGE FERRY	EACH	1.000				
X0327360	PUSHBOAT	EACH	1.000				
X0327361	PUSHBOAT DELIVERY	EACH	1.000				
X0327362	BARGE FERRY DELIVERY	EACH	1.000				
X0327363	SURPLUS BARGE	EACH	2.000				
X0327364	SURPLUS PUSHBOAT	EACH	1.000				
67100100	MOBILIZATION	L SUM	1.000				

CONTRACT NUMBER **76D29**

THIS IS THE TOTAL BID **$** _____

NOTES:

1. **Each PAY ITEM should have a UNIT PRICE and a TOTAL PRICE.**
2. **The UNIT PRICE shall govern if no TOTAL PRICE is shown or if there is a discrepancy between the product of the UNIT PRICE multiplied by the QUANTITY.**
3. **If a UNIT PRICE is omitted, the TOTAL PRICE will be divided by the QUANTITY in order to establish a UNIT PRICE.**
4. **A bid may be declared UNACCEPTABLE if neither a unit price nor a total price is shown.**

6. **COMBINATION BIDS.** The undersigned further agrees that if awarded the contract for the sections contained in the following combination, he/she will perform the work in accordance with the requirements of each individual proposal comprising the combination bid specified in the schedule below, and that the combination bid shall be prorated against each section in proportion to the bid submitted for the same. If an error is found to exist in the gross sum bid for one or more of the individual sections included in a combination, the combination bid shall be corrected as provided in the specifications.

When a combination bid is submitted, the schedule below must be completed in each proposal comprising the combination.

If alternate bids are submitted for one or more of the sections comprising the combination, a combination bid must be submitted for each alternate.

Schedule of Combination Bids

Combination No.	Sections Included in Combination	Combination Bid Dollars	Cents

7. **SCHEDULE OF PRICES.** The undersigned bidder submits herewith, in accordance with the rules and instructions, a schedule of prices for the items of work for which bids are sought. The unit prices bid are in U.S. dollars and cents, and all extensions and summations have been made. The bidder understands that the quantities appearing in the bid schedule are approximate and are provided for the purpose of obtaining a gross sum for the comparison of bids. If there is an error in the extension of the unit prices, the unit prices shall govern. Payment to the contractor awarded the contract will be made only for actual quantities of work performed and accepted or materials furnished according to the contract. The scheduled quantities of work to be done and materials to be furnished may be increased, decreased or omitted as provided elsewhere in the contract.

8. **AUTHORITY TO DO BUSINESS IN ILLINOIS.** Section 20-43 of the Illinois Procurement Code (30 ILCS 500/20-43) provides that a person (other than an individual acting as a sole proprietor) must be a legal entity authorized to do business in the State of Illinois prior to submitting the bid.

9. **The services of a subcontractor will or may be used.**

Check box Yes ☐
Check box No ☐

For known subcontractors with subcontracts with an annual value of more than $25,000, the contract shall include their name, address, and the dollar allocation for each subcontractor.

_____

_____

10. **EXECUTION OF CONTRACT**: The Department of Transportation will, in accordance with the rules governing Department procurements, execute the contract and shall be the sole entity having the authority to accept performance and make payments under the contract. Execution of the contract by the Chief Procurement Officer or the State Purchasing Officer is for approval of the procurement process and execution of the contract by the Department. Neither the Chief Procurement Officer nor the State Purchasing Officer shall be responsible for administration of the contract or determinations respecting performance or payment there under except as otherwise permitted in the Illinois Procurement Code.

RETURN WITH BID

STATE REQUIRED ETHICAL STANDARDS GOVERNING CONTRACT PROCUREMENT: ASSURANCES, CERTIFICATIONS AND DISCLOSURES

I. GENERAL

A. Article 50 of the Illinois Procurement Code establishes the duty of all State chief procurement officers, State purchasing officers, and their designees to maximize the value of the expenditure of public moneys in procuring goods, services, and contracts for the State of Illinois and to act in a manner that maintains the integrity and public trust of State government. In discharging this duty, they are charged by law to use all available information, reasonable efforts, and reasonable actions to protect, safeguard, and maintain the procurement process of the State of Illinois.

B. In order to comply with the provisions of Article 50 and to carry out the duty established therein, all bidders are to adhere to ethical standards established for the procurement process, and to make such assurances, disclosures and certifications required by law. Except as otherwise required in subsection III, paragraphs J-M, by execution of the Proposal Signature Sheet, the bidder indicates that each of the mandated assurances have been read and understood, that each certification is made and understood, and that each disclosure requirement has been understood and completed.

C. In addition to all other remedies provided by law, failure to comply with any assurance, failure to make any disclosure or the making of a false certification shall be grounds for the chief procurement officer to void the contract, or subcontract, and may result in the suspension or debarment of the bidder or subcontractor.

II. ASSURANCES

The assurances hereinafter made by the bidder are each a material representation of fact upon which reliance is placed should the Department enter into the contract with the bidder.

A. Conflicts of Interest

1. The Illinois Procurement Code provides in pertinent part:

Section 50-13. Conflicts of Interest.

(a) Prohibition. It is unlawful for any person holding an elective office in this State, holding a seat in the General Assembly, or appointed to or employed in any of the offices or agencies of state government and who receives compensation for such employment in excess of 60% of the salary of the Governor of the State of Illinois, or who is an officer or employee of the Capital Development Board or the Illinois Toll Highway Authority, or who is the spouse or minor child of any such person to have or acquire any contract, or any direct pecuniary interest in any contract therein, whether for stationery, printing, paper, or any services, materials, or supplies, that will be wholly or partially satisfied by the payment of funds appropriated by the General Assembly of the State of Illinois or in any contract of the Capital Development Board or the Illinois Toll Highway authority.

(b) Interests. It is unlawful for any firm, partnership, association or corporation, in which any person listed in subsection (a) is entitled to receive (i) more than 7 1/2% of the total distributable income or (ii) an amount in excess of the salary of the Governor, to have or acquire any such contract or direct pecuniary interest therein.

(c) Combined interests. It is unlawful for any firm, partnership, association, or corporation, in which any person listed in subsection (a) together with his or her spouse or minor children is entitled to receive (i) more than 15%, in the aggregate, of the total distributable income or (ii) an amount in excess of 2 times the salary of the Governor, to have or acquire any such contract or direct pecuniary interest therein.

(d) Securities. Nothing in this Section invalidates the provisions of any bond or other security previously offered or to be offered for sale or sold by or for the State of Illinois.

(e) Prior interests. This Section does not affect the validity of any contract made between the State and an officer or employee of the State or member of the General Assembly, his or her spouse, minor child or any combination of those persons if that contract was in existence before his or her election or employment as an officer, member, or employee. The contract is voidable, however, if it cannot be completed within 365 days after the officer, member, or employee takes office or is employed.

The current salary of the Governor is $177,412.00. Sixty percent of the salary is $106,447.20.

2. The bidder assures the Department that the award and execution of the contract would not cause a violation of Section 50-13, or that an effective exemption has been issued by the Board of Ethics to any individual subject to the Section 50-13 prohibitions pursuant to the provisions of Section 50-20 of the Code and Executive Order Number 3 (1998). Information concerning the exemption process is available from the Department upon request.

B. Negotiations

1. The Illinois Procurement Code provides in pertinent part:

Section 50-15. Negotiations.

(a) It is unlawful for any person employed in or on a continual contractual relationship with any of the offices or agencies of State government to participate in contract negotiations on behalf of that office or agency with any firm, partnership, association, or corporation with whom that person has a contract for future employment or is negotiating concerning possible future employment.

2. The bidder assures the Department that the award and execution of the contract would not cause a violation of Section 50-15, and that the bidder has no knowledge of any facts relevant to the kinds of acts prohibited therein.

C. Inducements

1. The Illinois Procurement Code provides:

Section 50-25. Inducement. Any person who offers or pays any money or other valuable thing to any person to induce him or her not to bid for a State contract or as recompense for not having bid on a State contract is guilty of a Class 4 felony. Any person who accepts any money or other valuable thing for not bidding for a State contract or who withholds a bid in consideration of the promise for the payment of money or other valuable thing is guilty of a Class 4 felony.

2. The bidder assures the Department that the award and execution of the contract would not cause a violation of Section 50-25, and that the bidder has no knowledge of any facts relevant to the kinds of acts prohibited therein.

D. Revolving Door Prohibition

1. The Illinois Procurement Code provides:

Section 50-30. Revolving door prohibition. Chief procurement officers, State purchasing officers, procurement compliance monitors, their designees whose principal duties are directly related to State procurement, and executive officers confirmed by the Senate are expressly prohibited for a period of 2 years after terminating an affected position from engaging in any procurement activity relating to the State agency most recently employing them in an affected position for a period of at least 6 months. The prohibition includes, but is not limited to: lobbying the procurement process; specifying; bidding; proposing bid, proposal, or contract documents; on their own behalf or on behalf of any firm, partnership, association, or corporation. This Section applies only to persons who terminate an affected position on or after January 15, 1999.

2. The bidder assures the Department that the award and execution of the contract would not cause a violation of Section 50-30, and that the bidder has no knowledge of any facts relevant to the kinds of acts prohibited therein.

E. Reporting Anticompetitive Practices

1. The Illinois Procurement Code provides:

Section 50-40. Reporting anticompetitive practices. When, for any reason, any vendor, bidder, contractor, chief procurement officer, State purchasing officer, designee, elected official, or State employee suspects collusion or other anticompetitive practice among any bidders, offerors, contractors, proposers, or employees of the State, a notice of the relevant facts shall be transmitted to the Attorney General and the chief procurement officer.

2. The bidder assures the Department that it has not failed to report any relevant facts concerning the practices addressed in Section 50-40 which may involve the contract for which the bid is submitted.

F. Confidentiality

1. The Illinois Procurement Code provides:

Section 50-45. Confidentiality. Any chief procurement officer, State purchasing officer, designee, or executive officer who willfully uses or allows the use of specifications, competitive bid documents, proprietary competitive information, proposals, contracts, or selection information to compromise the fairness or integrity of the procurement, bidding, or contract process shall be subject to immediate dismissal, regardless of the Personnel code, any contract, or any collective bargaining agreement, and may in addition be subject to criminal prosecution.

2. The bidder assures the Department that it has no knowledge of any fact relevant to the practices addressed in Section 50-45 which may involve the contract for which the bid is submitted.

G. Insider Information

1. The Illinois Procurement Act provides:

Section 50-50. Insider information. It is unlawful for any current or former elected or appointed State official or State employee to knowingly use confidential information available only by virtue of that office or employment for actual or anticipated gain for themselves or another person.

2. The bidder assures the Department that it has no knowledge of any facts relevant to the practices addressed in Section 50-50 which may involve the contract for which the bid is submitted.

III. CERTIFICATIONS

The certifications hereinafter made by the bidder are each a material representation of fact upon which reliance is placed should the Department enter into the contract with the bidder. Section 50-2 of the Illinois Procurement Code provides that every person that has entered into a multi-year contract and every subcontractor with a multi-year subcontract shall certify, by July 1 of each fiscal year covered by the contract after the initial fiscal year, to the responsible chief procurement officer whether it continues to satisfy the requirements of Article 50 pertaining to the eligibility for a contract award. If a contractor or subcontractor is not able to truthfully certify that it continues to meet all requirements, it shall provide with its certification a detailed explanation of the circumstances leading to the change in certification status. A contractor or subcontractor that makes a false statement material to any given certification required under Article 50 is, in addition to any other penalties or consequences prescribed by law, subject to liability under the Whistleblower Reward and Protection Act for submission of a false claim.

A. Bribery

1. The Illinois Procurement Code provides:

Section 50-5. Bribery.

(a) Prohibition. No person or business shall be awarded a contract or subcontract under this Code who:

(1) has been convicted under the laws of Illinois or any other state of bribery or attempting to bribe an officer or employee of the State of Illinois or any other state in that officer's or employee's official capacity; or

(2) has made an admission of guilt of that conduct that is a matter of record but has not been prosecuted for that conduct.

(b) Businesses. No business shall be barred from contracting with any unit of State or local government, or subcontracting under such a contract, as a result of a conviction under this Section of any employee or agent of the business if the employee or agent is no longer employed by the business and:

(1) the business has been finally adjudicated not guilty; or

(2) the business demonstrates to the governmental entity with which it seeks to contract, or which is signatory to the contract which the subcontract relates, and that entity finds that the commission of the offense was not authorized, requested, commanded, or performed by a director, officer, or high managerial agent on behalf of the business as provided in paragraph (2) of subsection (a) of Section 5-4 of the Criminal Code of 1961.

(c) Conduct on behalf of business. For purposes of this Section, when an official, agent, or employee of a business committed the bribery or attempted bribery on behalf of the business and in accordance with the direction or authorization of a responsible official of the business, the business shall be chargeable with the conduct.

(d) Certification. Every bid submitted to and contract executed by the State, and every subcontract subject to Section 20-120 of the Procurement Code shall contain a certification by the contractor or the subcontractor, respectively, that the contractor or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the chief procurement officer may declare the related contract void if any certifications required by this Section are false. A contractor who makes a false statement, material to the certification, commits a Class 3 felony.

2. The contractor or subcontractor certifies that it is not barred from being awarded a contract under Section 50.5.

B. Felons

1. The Illinois Procurement Code provides:

Section 50-10. Felons. Unless otherwise provided, no person or business convicted of a felony shall do business with the State of Illinois or any State agency, or enter into a subcontract, from the date of conviction until 5 years after the date of completion of the sentence for that felony, unless no person held responsible by a prosecutorial office for the facts upon which the conviction was based continues to have any involvement with the business.

1. Certification. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Procurement Code shall contain a certification by the bidder or contractor or subcontractor, respectively, that the bidder, contractor, or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the chief procurement officer may declare the related contract void if any of the certifications required by this Section are false.

C. Debt Delinquency

1. The Illinois Procurement Code provides:

Section 50-11 and 50-12. Debt Delinquency.

The contractor or bidder or subcontractor, respectively, certifies that it, or any affiliate, is not barred from being awarded a contract or subcontract under the Procurement Code. Section 50-11 prohibits a person from entering into a contract with a State agency, or entering into a subcontract, if it knows or should know that it, or any affiliate, is delinquent in the payment of any debt to the State as defined by the Debt Collection Board. Section 50-12 prohibits a person from entering into a contract with a State agency, or entering into a subcontract, if it, or any affiliate, has failed to collect and remit Illinois Use Tax on all sales of tangible personal property into the State of Illinois in accordance with the provisions of the Illinois Use Tax Act. The bidder or contractor or subcontractor, respectively, further acknowledges that the chief procurement officer may declare the related contract void if this certification is false or if the bidder, contractor, or subcontractor, or any affiliate, is determined to be delinquent in the payment of any debt to the State during the term of the contract.

D. Prohibited Bidders, Contractors and Subcontractors

1. The Illinois Procurement Code provides:

Section 50-10.5 and 50-60(c). Prohibited bidders, contractors and subcontractors.
The bidder or contractor or subcontractor, respectively, certifies in accordance with 30 ILCS 500/50-10.5 that no officer, director, partner or other managerial agent of the contracting business has been convicted of a felony under the Sarbanes-Oxley Act of 2002 or a Class 3 or Class 2 felony under the Illinois Securities Law of 1953 or if in violation of Subsection (c) for a period of five years from the date of conviction. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Procurement Code shall contain a certification by the bidder, contractor, or subcontractor, respectively, that the bidder, contractor, or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the chief procurement officer shall declare the related contract void if any of the certifications completed pursuant to this Section are false.

E. Section 42 of the Environmental Protection Act

The bidder or contractor or subcontractor, respectively, certifies in accordance with 30 ILCS 500/50-12 that the bidder, contractor, or subcontractor, is not barred from being awarded a contract or entering into a subcontract under this Section which prohibits the bidding on or entering into contracts with the State of Illinois or a State agency, or entering into any subcontract, that is subject to the Procurement Code by a person or business found by a court or the Pollution Control Board to have committed a willful or knowing violation of Section 42 of the Environmental Protection Act for a period of five years from the date of the order. The bidder or contractor or subcontractor, respectively, acknowledges that the chief procurement officer may declare the contract void if this certification is false.

F. Educational Loan

1. Section 3 of the Educational Loan Default Act provides:

§ 3. No State agency shall contract with an individual for goods or services if that individual is in default, as defined in Section 2 of this Act, on an educational loan. Any contract used by any State agency shall include a statement certifying that the individual is not in default on an educational loan as provided in this Section.

2. The bidder, if an individual as opposed to a corporation, partnership or other form of business organization, certifies that the bidder is not in default on an educational loan as provided in Section 3 of the Act.

G. Bid-Rigging/Bid Rotating

1. Section 33E-11 of the Criminal Code of 1961 provides:

§ 33E-11. (a) Every bid submitted to and public contract executed pursuant to such bid by the State or a unit of local government shall contain a certification by the prime contractor that the prime contractor is not barred from contracting with any unit of State or local government as a result of a violation of either Section 33E-3 or 33E-4 of this Article. The State and units of local government shall provide the appropriate forms for such certification.

(b) A contractor who makes a false statement, material to the certification, commits a Class 3 felony.

A violation of Section 33E-3 would be represented by a conviction of the crime of bid-rigging which, in addition to Class 3 felony sentencing, provides that any person convicted of this offense or any similar offense of any state or the United States which contains the same elements as this offense shall be barred for 5 years from the date of conviction from contracting with any unit of State or local government. No corporation shall be barred from contracting with any unit of State or local government as a result of a conviction under this Section of any employee or agent of such corporation if the employee so convicted is no longer employed by the corporation and: (1) it has been finally adjudicated not guilty or (2) if it demonstrates to the governmental entity with which it seeks to contract and that entity finds that the commission of the offense was neither authorized, requested, commanded, nor performed by a director, officer or a high managerial agent in behalf of the corporation.

A violation of Section 33E-4 would be represented by a conviction of the crime of bid-rotating which, in addition to Class 2 felony sentencing, provides that any person convicted of this offense or any similar offense of any state or the United States which contains the same elements as this offense shall be permanently barred from contracting with any unit of State or local government. No corporation shall be barred from contracting with any unit of State or local government as a result of a conviction under this Section of any employee or agent of such corporation if the employee so convicted is no longer employed by the corporation and: (1) it has been finally adjudicated not guilty or (2) if it demonstrates to the governmental entity with which it seeks to contract and that entity finds that the commission of the offense was neither authorized, requested, commanded, nor performed by a director, officer or a high managerial agent in behalf of the corporation.

2. The bidder certifies that it is not barred from contracting with the Department by reason of a violation of either Section 33E-3 or Section 33E-4.

H. International Anti-Boycott

1. Section 5 of the International Anti-Boycott Certification Act provides:

§ 5. State contracts. Every contract entered into by the State of Illinois for the manufacture, furnishing, or purchasing of supplies, material, or equipment or for the furnishing of work, labor, or services, in an amount exceeding the threshold for small purchases according to the purchasing laws of this State or $10,000.00, whichever is less, shall contain certification, as a material condition of the contract, by which the contractor agrees that neither the contractor nor any substantially-owned affiliated company is participating or shall participate in an international boycott in violation of the provisions of the U.S. Export Administration Act of 1979 or the regulations of the U.S. Department of Commerce promulgated under that Act.

2. The bidder makes the certification set forth in Section 5 of the Act.

I. Drug Free Workplace

1. The Illinois “Drug Free Workplace Act” applies to this contract and it is necessary to comply with the provisions of the “Act” if the contractor is a corporation, partnership, or other entity (including a sole proprietorship) which has 25 or more employees.

2. The bidder certifies that if awarded a contract in excess of $5,000 it will provide a drug free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance, including cannabis, is prohibited in the contractor’s workplace; specifying the actions that will be taken against employees for violations of such prohibition; and notifying the employee that, as a condition of employment on such contract, the employee shall abide by the terms of the statement, and notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five (5) days after such conviction.

(b) Establishing a drug free awareness program to inform employees about the dangers of drug abuse in the workplace; the contractor’s policy of maintaining a drug free workplace; any available drug counseling, rehabilitation, and employee assistance programs; and the penalties that may be imposed upon employees for drug violations.

(c) Providing a copy of the statement required by subparagraph (1) to each employee engaged in the performance of the contract and to post the statement in a prominent place in the workplace.

(d) Notifying the Department within ten (10) days after receiving notice from an employee or otherwise receiving actual notice of the conviction of an employee for a violation of any criminal drug statute occurring in the workplace.

(e) Imposing or requiring, within 30 days after receiving notice from an employee of a conviction or actual notice of such a conviction, an appropriate personnel action, up to and including termination, or the satisfactory participation in a drug abuse assistance or rehabilitation program approved by a federal, state or local health, law enforcement or other appropriate agency.

(f) Assisting employees in selecting a course of action in the event drug counseling, treatment, and rehabilitation is required and indicating that a trained referral team is in place.

(g) Making a good faith effort to continue to maintain a drug free workplace through implementation of the actions and efforts stated in this certification.

J. Disclosure of Business Operations in Iran

Section 50-36 of the Illinois Procurement Code, 30ILCS 500/50-36 provides that each bid, offer, or proposal submitted for a State contract shall include a disclosure of whether or not the Company acting as the bidder, offeror, or proposing entity, or any of its corporate parents or subsidiaries, within the 24 months before submission of the bid, offer, or proposal had business operations that involved contracts with or provision of supplies or services to the Government of Iran, companies in which the Government of Iran has any direct or indirect equity share, consortiums or projects commissioned by the Government of Iran, or companies involved in consortiums or projects commissioned by the Government of Iran and either of the following conditions apply:

(1) More than 10% of the Company's revenues produced in or assets located in Iran involve oil-related activities or mineral-extraction activities; less than 75% of the Company's revenues produced in or assets located in Iran involve contracts with or provision of oil-related or mineral-extraction products or services to the Government of Iran or a project or consortium created exclusively by that government; and the Company has failed to take substantial action.

(2) The Company has, on or after August 5, 1996, made an investment of $20 million or more, or any combination of investments of at least $10 million each that in the aggregate equals or exceeds $20 million in any 12-month period, which directly or significantly contributes to the enhancement of Iran's ability to develop petroleum resources of Iran.

The terms “Business operations”, “Company”, “Mineral-extraction activities”, “Oil-related activities”, “Petroleum resources”, and “Substantial action” are all defined in the Code.

Failure to make the disclosure required by the Code shall cause the bid, offer or proposal to be considered not responsive. The disclosure will be considered when evaluating the bid, offer, or proposal or awarding the contract. The name of each Company disclosed as doing business or having done business in Iran will be provided to the State Comptroller.

Check the appropriate statement:

/___/ Company has no business operations in Iran to disclose.

/___/ Company has business operations in Iran as disclosed the attached document.

K. Apprenticeship and Training Certification (Does not apply to federal aid projects)

In accordance with the provisions of Section 30-22 (6) of the Illinois Procurement Code, the bidder certifies that it is a participant, either as an individual or as part of a group program, in the approved apprenticeship and training programs applicable to each type of work or craft that the bidder will perform with its own forces. The bidder further certifies for work that will be performed by subcontract that each of its subcontractors submitted for approval either (a) is, at the time of such bid, participating in an approved, applicable apprenticeship and training program; or (b) will, prior to commencement of performance of work pursuant to this contract, begin participation in an approved apprenticeship and training program applicable to the work of the subcontract. The Department, at any time before or after award, may require the production of a copy of each applicable Certificate of Registration issued by the United States Department of Labor evidencing such participation by the contractor and any or all of its subcontractors. Applicable apprenticeship and training programs are those that have been approved and registered with the United States Department of Labor. The bidder shall list in the space below, the official name of the program sponsor holding the Certificate of Registration for all of the types of work or crafts in which the bidder is a participant and that will be performed with the bidder’s forces. Types of work or craft work that will be subcontracted shall be included and listed as subcontract work. The list shall also indicate any type of work or craft job category that does not have an applicable apprenticeship or training program. **The bidder is responsible for making a complete report and shall make certain that each type of work or craft job category that will be utilized on the project as reported on the Construction Employee Workforce Projection (Form BC-1256) and returned with the bid is accounted for and listed.**

_____**NA-FEDERAL**_____

_____

_____

The requirements of this certification and disclosure are a material part of the contract, and the contractor shall require this certification provision to be included in all approved subcontracts. In order to fulfill this requirement, it shall not be necessary that an applicable program sponsor be currently taking or that it will take applications for apprenticeship, training or employment during the performance of the work of this contract.

L. Political Contributions and Registration with the State Board of Elections

Sections 20-160 and 50-37 of the Illinois Procurement Code regulate political contributions from business entities and any affiliated entities or affiliated persons bidding on or contracting with the state. Generally under Section 50-37, any business entity, and any affiliated entity or affiliated person of the business entity, whose current year contracts with all state agencies exceed an awarded value of $50,000, are prohibited from making any contributions to any political committees established to promote the candidacy of the officeholder responsible for the awarding of the contracts or any other declared candidate for that office for the duration of the term of office of the incumbent officeholder or a period 2 years after the termination of the contract, whichever is longer. Any business entity and affiliated entities or affiliated persons whose state contracts in the current year do not exceed an awarded value of $50,000, but whose aggregate pending bids and proposals on state contracts exceed $50,000, either alone or in combination with contracts not exceeding $50,000, are prohibited from making any political contributions to any political committee established to promote the candidacy of the officeholder responsible for awarding the pending contract during the period beginning on the date the invitation for bids or request for proposals is issued and ending on the day after the date of award or selection if the entity was not awarded or selected. Section 20-160 requires certification of registration of affected business entities in accordance with procedures found in Section 9-35 of The Election Code.

By submission of a bid, the contractor business entity acknowledges and agrees that it has read and understands Sections 20-160 and 50-37 of the Illinois Procurement Code, and that it makes the following certification:

The undersigned business entity certifies that it has registered as a business with the State Board of Elections and acknowledges a continuing duty to update the registration in accordance with the above referenced statutes. A copy of the certificate of registration shall be submitted with the bid. The bidder is cautioned that the Department will not award a contract without submission of the certificate of registration.

These requirements and compliance with the above referenced statutory sections are a material part of the contract, and any breach thereof shall be cause to void the contract under Section 50-60 of the Illinois Procurement Code. This provision does not apply to Federal-aid contracts.

M. Lobbyist Disclosure

Section 50-38 of the Illinois Procurement Code requires that any bidder or offeror on a State contract that hires a person required to register under the Lobbyist Registration Act to assist in obtaining a contract shall:

(i) Disclose all costs, fees, compensation, reimbursements, and other remunerations paid or to be paid to the lobbyist related to the contract,
(ii) Not bill or otherwise cause the State of Illinois to pay for any of the lobbyist's costs, fees, compensation, reimbursements, or other remuneration, and
(iii) Sign a verification certifying that none of the lobbyist's costs, fees, compensation, reimbursements, or other remuneration were billed to the State.

This information, along with all supporting documents, shall be filed with the agency awarding the contract and with the Secretary of State. The chief procurement officer shall post this information, together with the contract award notice, in the online Procurement Bulletin.

Pursuant to Subsection (c) of this Section, no person or entity shall retain a person or entity to attempt to influence the outcome of a procurement decision made under the Procurement Code for compensation contingent in whole or in part upon the decision or procurement. Any person who violates this subsection is guilty of a business offense and shall be fined not more than $10,000.

Bidder acknowledges that it is required to disclose the hiring of any person required to register pursuant to the Illinois Lobbyist Registration Act (25 ILCS 170) in connection with this contract.

☐ Bidder has not hired any person required to register pursuant to the Illinois Lobbyist Registration Act in connection with this contract.

Or

☐ Bidder has hired the following persons required to register pursuant to the Illinois Lobbyist Registration Act in connection with the contract:

Name and address of person: _____
All costs, fees, compensation, reimbursements and other remuneration paid to said person: _____
_____
_____
_____

IV. DISCLOSURES

A. The disclosures hereinafter made by the bidder are each a material representation of fact upon which reliance is placed should the Department enter into the contract with the bidder. The bidder further certifies that the Department has received the disclosure forms for each bid.

The chief procurement officer may void the bid, contract, or subcontract, respectively, if it is later determined that the bidder or subcontractor rendered a false or erroneous disclosure. A contractor or subcontractor may be suspended or debarred for violations of the Procurement Code. Furthermore, the chief procurement officer may void the contract and the surety providing the performance bond shall be responsible for completion of the contract.

B. Financial Interests and Conflicts of Interest

1. Section 50-35 of the Illinois Procurement Code provides that all bids of more than $25,000 shall be accompanied by disclosure of the financial interests of the bidder. This disclosed information for the successful bidder, will be maintained as public information subject to release by request pursuant to the Freedom of Information Act, filed with the Procurement Policy Board, and shall be incorporated as a material term of the contract. Furthermore, pursuant to Section 5-5, the Procurement Policy Board may review a proposal, bid, or contract and issue a recommendation to void a contract or reject a proposal or bid based on any violation of the Procurement Code or the existence of a conflict of interest as provided in subsections (b) and (d) of Section 50-35.

The financial interests to be disclosed shall include ownership or distributive income share that is in excess of 5%, or an amount greater than 60% of the annual salary of the Governor, of the bidding entity or its parent entity, whichever is less, unless the contractor or bidder is a publicly traded entity subject to Federal 10K reporting, in which case it may submit its 10K disclosure in place of the prescribed disclosure. If a bidder is a privately held entity that is exempt from Federal 10K reporting, but has more than 200 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any person or entity holding any ownership share that is in excess of 5%. The disclosure shall include the names, addresses, and dollar or proportionate share of ownership of each person making the disclosure, their instrument of ownership or beneficial relationship, and notice of any potential conflict of interest resulting from the current ownership or beneficial interest of each person making the disclosure having any of the relationships identified in Section 50-35 and on the disclosure form.
The current annual salary of the Governor is $177,412.00.

In addition, all disclosures shall indicate any other current or pending contracts, proposals, leases, or other ongoing procurement relationships the bidding entity has with any other unit of state government and shall clearly identify the unit and the contract, proposal, lease, or other relationship.

2. Disclosure Forms. Disclosure Form A is attached for use concerning the individuals meeting the above ownership or distributive share requirements. Subject individuals should be covered each by one form. In addition, a second form (Disclosure Form B) provides for the disclosure of current or pending procurement relationships with other (non-IDOT) state agencies. **The forms must be included with each bid.**

C. Disclosure Form Instructions

Form A Instructions for Financial Information & Potential Conflicts of Interest

If the bidder is a publicly traded entity subject to Federal 10K reporting, the 10K Report may be submitted to meet the requirements of Form A. If a bidder is a privately held entity that is exempt from Federal 10K reporting, but has more than 200 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any person or entity holding any ownership share that is in excess of 5%. If a bidder is not subject to Federal 10K reporting, the bidder must determine if any individuals are required by law to complete a financial disclosure form. To do this, the bidder should answer each of the following questions. A "YES" answer indicates Form A must be completed. If the answer to each of the following questions is "NO", then the NOT APPLICABLE STATEMENT on Form A must be signed and dated by a person that is authorized to execute contracts for the bidding company. Note: These questions are for assistance only and are not required to be completed.

1. Does anyone in your organization have a direct or beneficial ownership share of greater than 5% of the bidding entity or parent entity? YES ___ NO ___
2. Does anyone in your organization have a direct or beneficial ownership share of less than 5%, but which has a value greater than 60% of the annual salary of the Governor? YES ___ NO___
3. Does anyone in your organization receive more than 60% of the annual salary of the Governor of the bidding entity's or parent entity's distributive income? YES ___ NO __
4. Does anyone in your organization receive greater than 5% of the bidding entity's or parent entity's total distributive income, but which is less than 60% of the annual salary of the Governor? YES ___ NO __

   (Note: Only one set of forms needs to be completed per person per bid even if a specific individual would require a yes answer to more than one question.)

A "YES" answer to any of these questions requires the completion of Form A. The bidder must determine each individual in the bidding entity or the bidding entity's parent company that would cause the questions to be answered "Yes". Each form must be signed and dated by a person that is authorized to execute contracts for your organization. **Photocopied or stamped signatures are not acceptable**. The person signing can be, but does not have to be, the person for which the form is being completed. The bidder is responsible for the accuracy of any information provided.

If the answer to each of the above questions is "NO", then the NOT APPLICABLE STATEMENT of Form A must be signed and dated by a person that is authorized to execute contracts for your company.

Form B: **Instructions for Identifying Other Contracts & Procurement Related Information**

Disclosure Form B must be completed for each bid submitted by the bidding entity. *Note: Checking the NOT APPLICABLE STATEMENT on Form A does not allow the bidder to ignore Form B. Form B must be completed, checked, and dated or the bidder may be considered nonresponsive and the bid will not be accepted.*

The Bidder shall identify, by checking Yes or No on Form B, whether it has any pending contracts (including leases), bids, proposals, or other ongoing procurement relationship with any other (non-IDOT) State of Illinois agency. If "No" is checked, the bidder only needs to complete the check box on the bottom of Form B. If "Yes" is checked, the bidder must do one of the following:

Option I: If the bidder did not submit an Affidavit of Availability to obtain authorization to bid, the bidder must list all non-IDOT State of Illinois agency pending contracts, leases, bids, proposals, and other ongoing procurement relationships. These items may be listed on Form B or on an attached sheet(s). Do not include IDOT contracts. Contracts with cities, counties, villages, etc. are not considered State of Illinois agency contracts and are not to be included. Contracts with other State of Illinois agencies such as the Department of Natural Resources or the Capital Development Board must be included. Bidders who submit Affidavits of Availability are suggested to use Option II.

Option II: If the bidder is required and has submitted an Affidavit of Availability in order to obtain authorization to bid, the bidder may write or type "See Affidavit of Availability" which indicates that the Affidavit of Availability is incorporated by reference and includes all non-IDOT State of Illinois agency pending contracts, leases, bids, proposals, and other ongoing procurement relationships. For any contracts that are not covered by the Affidavit of Availability, the bidder must identify them on Form B or on an attached sheet(s). These might be such things as leases.

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ILLINOIS DEPARTMENT OF TRANSPORTATION

Form A
Financial Information & Potential Conflicts of Interest Disclosure

Contractor Name		
Legal Address		
City, State, Zip		
Telephone Number	Email Address	Fax Number (if available)

Disclosure of the information contained in this Form is required by the Section 50-35 of the Illinois Procurement Code (30 ILCS 500). Vendors desiring to enter into a contract with the State of Illinois must disclose the financial information and potential conflict of interest information as specified in this Disclosure Form. This information shall become part of the publicly available contract file. This Form A must be completed for bids in excess of $25,000, and for all open-ended contracts. **A publicly traded company may submit a 10K disclosure (or equivalent if applicable) in satisfaction of the requirements set forth in Form A. See Disclosure Form Instructions.**

The current annual salary of the Governor is $177,412.00.

DISCLOSURE OF FINANCIAL INFORMATION

1. Disclosure of Financial Information. The individual named below has an interest in the BIDDER (or its parent) in terms of ownership or distributive income share in excess of 5%, or an interest which has a value of more than 60% of the annual salary of the Governor. **(Make copies of this form as necessary and attach a separate Disclosure Form A for each individual meeting these requirements)**

FOR INDIVIDUAL (type or print information)

NAME: _____

ADDRESS _____

_____

Type of ownership/distributable income share:

stock _____ sole proprietorship _____ Partnership _____ other: (explain on separate sheet):

% or $ value of ownership/distributable income share: _____

2. Disclosure of Potential Conflicts of Interest. Check "Yes" or "No" to indicate which, if any, of the following potential conflict of interest relationships apply. If the answer to any question is "Yes", please attach additional pages and describe.

(a) State employment, currently or in the previous 3 years, including contractual employment of services.

Yes ___ No __

If your answer is yes, please answer each of the following questions.

1. Are you currently an officer or employee of either the Capitol Development Board or the Illinois State Toll Highway Authority? Yes ___ No __

2. Are you currently appointed to or employed by any agency of the State of Illinois? If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor provide the name the State agency for which you are employed and your annual salary. _____

_____

3. If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor, are you entitled to receive (i) more than 7 1/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of 100% of the annual salary of the Governor? Yes ___ No __

4. If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor, are you and your spouse or minor children entitled to receive (i) more than 15% in aggregate of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of two times the salary of the Governor? Yes ___ No __

(b) State employment of spouse, father, mother, son, or daughter, including contractual employment for services in the previous 2 years.

Yes ___No __

If your answer is yes, please answer each of the following questions.

1. Is your spouse or any minor children currently an officer or employee of the Capitol Development Board or the Illinois State Toll Highway Authority? Yes ___No __

2. Is your spouse or any minor children currently appointed to or employed by any agency of the State of Illinois? If your spouse or minor children is/are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, provide the name of the spouse and/or minor children, the name of the State agency for which he/she is employed and his/her annual salary. _____
_____

3. If your spouse or any minor children is/are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, are you entitled to receive (i) more than 71/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess 100% of the annual salary of the Governor? Yes ___ No __

4. If your spouse or any minor children are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, are you and your spouse or any minor children entitled to receive (i) more than 15% in the aggregate of the total distributable income from your firm, partnership, association or corporation, or (ii) an amount in excess of two times the salary of the Governor?

Yes ___ No __

(c) Elective status; the holding of elective office of the State of Illinois, the government of the United States, any unit of local government authorized by the Constitution of the State of Illinois or the statutes of the State of Illinois currently or in the previous 3 years. Yes ___No __

(d) Relationship to anyone holding elective office currently or in the previous 2 years; spouse, father, mother, son, or daughter. Yes ___No __

(e) Appointive office; the holding of any appointive government office of the State of Illinois, the United State of America, or any unit of local government authorized by the Constitution of the State of Illinois or the statues of the State of Illinois, which office entitles the holder to compensation in excess of the expenses incurred in the discharge of that office currently or in the previous 3 years. Yes ___No __

(f) Relationship to anyone holding appointive office currently or in the previous 2 years; spouse, father, mother, son, or daughter. Yes ___No __

(g) Employment, currently or in the previous 3 years, as or by any registered lobbyist of the State government. Yes ___No __

(h) Relationship to anyone who is or was a registered lobbyist in the previous 2 years; spouse, father, mother, son, or daughter. Yes ___No __

(i) Compensated employment, currently or in the previous 3 years, by any registered election or reelection committee registered with the Secretary of State or any county clerk of the State of Illinois, or any political action committee registered with either the Secretary of State or the Federal Board of Elections.
Yes ___ No __

(j) Relationship to anyone; spouse, father, mother, son, or daughter; who was a compensated employee in the last 2 years by any registered election or re-election committee registered with the Secretary of State or any county clerk of the State of Illinois, or any political action committee registered with either the Secretary of State or the Federal Board of Elections.
Yes ___ No __

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3. Communication Disclosure.

Disclose the name and address of each lobbyist and other agent of the bidder or offeror who is not identified in Section 2 of this form, who is has communicated, is communicating, or may communicate with any State officer or employee concerning the bid or offer. This disclosure is a continuing obligation and must be promptly supplemented for accuracy throughout the process and throughout the term of the contract. If no person is identified, enter "None" on the line below:

Name and address of person(s): _____

_____

_____

_____

RETURN WITH BID

4. Debarment Disclosure. For each of the persons identified under Sections 2 and 3 of this form, disclose whether any of the following has occurred within the previous 10 years: debarment from contracting with any governmental entity; professional licensure discipline; bankruptcies; adverse civil judgments and administrative findings; and criminal felony convictions. This disclosure is a continuing obligation and must be promptly supplemented for accuracy throughout the procurement process and term of the contract. If no person is identified, enter "None" on the line below:

Name of person(s): _____

Nature of disclosure: _____

_____

_____

_____

APPLICABLE STATEMENT

This Disclosure Form A is submitted on behalf of the INDIVIDUAL named on previous page. Under penalty of perjury, I certify the contents of this disclosure to be true and accurate to the best of my knowledge.

Completed by: ☐ _____ _____

Signature of Individual or Authorized Representative — Date

NOT APPLICABLE STATEMENT

Under penalty of perjury, I have determined that no individuals associated with this organization meet the criteria that would require the completion of this Form A.

This Disclosure Form A is submitted on behalf of the CONTRACTOR listed on the previous page.

☐ _____ _____

Signature of Authorized Representative — Date

The bidder has a continuing obligation to supplement these disclosures under Sec. 50-35 of the Procurement Code.

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ILLINOIS DEPARTMENT OF TRANSPORTATION

Form B
Other Contracts & Procurement Related Information Disclosure

Contractor Name		
Legal Address		
City, State, Zip		
Telephone Number	Email Address	Fax Number (if available)

Disclosure of the information contained in this Form is required by the Section 50-35 of the Illinois Procurement Act (30 ILCS 500). This information shall become part of the publicly available contract file. This Form B must be completed for bids in excess of $25,000, and for all open-ended contracts.

DISCLOSURE OF OTHER CONTRACTS AND PROCUREMENT RELATED INFORMATION

1. Identifying Other Contracts & Procurement Related Information. The BIDDER shall identify whether it has any pending contracts (including leases), bids, proposals, or other ongoing procurement relationship with any other State of Illinois agency: Yes ___ No __
If "No" is checked, the bidder only needs to complete the signature box on the bottom of this page.

2. If "Yes" is checked. Identify each such relationship by showing State of Illinois agency name and other descriptive information such as bid or project number (attach additional pages as necessary). SEE DISCLOSURE FORM INSTRUCTIONS:

THE FOLLOWING STATEMENT MUST BE CHECKED

☐ _____ _____
Signature of Authorized Representative Date

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SPECIAL NOTICE TO CONTRACTORS

The following requirements of the Illinois Department of Human Rights' Rules and Regulations are applicable to bidders on all construction contracts advertised by the Illinois Department of Transportation:

CONSTRUCTION EMPLOYEE UTILIZATION PROJECTION

(a) All bidders on construction contracts shall complete and submit, along with and as part of their bids, a Bidder's Employee Utilization Form (Form BC-1256) setting forth a projection and breakdown of the total workforce intended to be hired and/or allocated to such contract work by the bidder including a projection of minority and female employee utilization in all job classifications on the contract project.

(b) The Department of Transportation shall review the Employee Utilization Form, and workforce projections contained therein, of the contract awardee to determine if such projections reflect an underutilization of minority persons and/or women in any job classification in accordance with the Equal Employment Opportunity Clause and Section 7.2 of the Illinois Department of Human Rights' Rules and Regulations for Public Contracts adopted as amended on September 17, 1980. If it is determined that the contract awardee's projections reflect an underutilization of minority persons and/or women in any job classification, it shall be advised in writing of the manner in which it is underutilizing and such awardee shall be considered to be in breach of the contract unless, prior to commencement of work on the contract project, it submits revised satisfactory projections or an acceptable written affirmative action plan to correct such underutilization including a specific timetable geared to the completion stages of the contract.

(c) The Department of Transportation shall provide to the Department of Human Rights a copy of the contract awardee's Employee Utilization Form, a copy of any required written affirmative action plan, and any written correspondence related thereto. The Department of Human Rights may review and revise any action taken by the Department of Transportation with respect to these requirements.

RETURN WITH BID

Illinois Department of Transportation

Contract No. 76D29
JERSEY County
Section 2I-3
Project FBD-0040(011)
Route FAP 304
District 8 Construction Funds

PART I. IDENTIFICATION

Dept. Human Rights # _____ Duration of Project: _____

Name of Bidder: _____

PART II. WORKFORCE PROJECTION

A. The undersigned bidder has analyzed minority group and female populations, unemployment rates and availability of workers for the location in which this contract work is to be performed, and for the locations from which the bidder recruits employees, and hereby submits the following workforce projection including a projection for minority and female employee utilization in all job categories in the workforce to be allocated to this contract:

TABLE A

TOTAL Workforce Projection for Contract													TABLE B: CURRENT EMPLOYEES TO BE ASSIGNED TO CONTRACT			
			MINORITY EMPLOYEES						TRAINEES				TOTAL EMPLOYEES		MINORITY EMPLOYEES	
JOB CATEGORIES	TOTAL EMPLOYEES		BLACK		HISPANIC		*OTHER MINOR.		APPREN-TICES		ON THE JOB TRAINEES					
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
OFFICIALS (MANAGERS)																
SUPERVISORS																
FOREMEN																
CLERICAL																
EQUIPMENT OPERATORS																
MECHANICS																
TRUCK DRIVERS																
IRONWORKERS																
CARPENTERS																
CEMENT MASONS																
ELECTRICIANS																
PIPEFITTERS, PLUMBERS																
PAINTERS																
LABORERS, SEMI-SKILLED																
LABORERS, UNSKILLED																
TOTAL																

TABLE C

TOTAL Training Projection for Contract								
EMPLOYEES IN TRAINING	TOTAL EMPLOYEES		BLACK		HISPANIC		*OTHER MINOR.	
	M	F	M	F	M	F	M	F
APPRENTICES								
ON THE JOB TRAINEES								

*Other minorities are defined as Asians (A) or Native Americans (N).
Please specify race of each employee shown in Other Minorities column.

FOR DEPARTMENT USE ONLY

BC 1256 (Rev. 12/11/08)

Note: See instructions on page 2

PART II. WORKFORCE PROJECTION - continued

B. Included in "Total Employees" under Table A is the total number of **new hires** that would be employed in the event the undersigned bidder is awarded this contract.

The undersigned bidder projects that: (number) _____ new hires would be recruited from the area in which the contract project is located; and/or (number) _____ new hires would be recruited from the area in which the bidder's principal office or base of operation is located.

C. Included in "Total Employees" under Table A is a projection of numbers of persons to be employed directly by the undersigned bidder as well as a projection of numbers of persons to be employed by subcontractors.

The undersigned bidder estimates that (number) _____ persons will be directly employed by the prime contractor and that (number) _____ persons will be employed by subcontractors.

PART III. AFFIRMATIVE ACTION PLAN

A. The undersigned bidder understands and agrees that in the event the foregoing minority and female employee utilization projection included under **PART II** is determined to be an underutilization of minority persons or women in any job category, and in the event that the undersigned bidder is awarded this contract, he/she will, prior to commencement of work, develop and submit a written Affirmative Action Plan including a specific timetable (geared to the completion stages of the contract) whereby deficiencies in minority and/or female employee utilization are corrected. Such Affirmative Action Plan will be subject to approval by the contracting agency and the **Department of Human Rights**.

B. The undersigned bidder understands and agrees that the minority and female employee utilization projection submitted herein, and the goals and timetable included under an Affirmative Action Plan if required, are deemed to be part of the contract specifications.

Company _____ Telephone Number _____

_____

Address _____

NOTICE REGARDING SIGNATURE

The Bidder's signature on the Proposal Signature Sheet will constitute the signing of this form. The following signature block needs to be completed only if revisions are required.

Signature: ☐ _____ Title: _____ Date: _____

Instructions: All tables must include subcontractor personnel in addition to prime contractor personnel.

Table A - Include both the number of employees that would be hired to perform the contract work and the total number currently employed (Table B) that will be allocated to contract work, and include all apprentices and on-the-job trainees. The "Total Employees" column should include all employees including all minorities, apprentices and on-the-job trainees to be employed on the contract work.

Table B - Include all employees currently employed that will be allocated to the contract work including any apprentices and on-the-job trainees currently employed.

Table C - Indicate the racial breakdown of the total apprentices and on-the-job trainees shown in Table A.

RETURN WITH BID

ADDITIONAL FEDERAL REQUIREMENTS

In addition to the Required Contract Provisions for Federal-Aid Construction Contracts (FHWA 1273), all bidders make the following certifications.

A. By the execution of this proposal, the signing bidder certifies that the bidding entity has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action, in restraint of free competitive bidding in connection with the submitted bid. This statement made by the undersigned bidder is true and correct under penalty of perjury under the laws of the United States.

B. CERTIFICATION, EQUAL EMPLOYMENT OPPORTUNITY:

1. Have you participated in any previous contracts or subcontracts subject to the equal opportunity clause. YES _____ NO _____

2. If answer to #1 is yes, have you filed with the Joint Reporting Committee, the Director of OFCC, any Federal agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements of those organizations? YES _____ NO _____

RETURN WITH BID

Contract No. 76D29
JERSEY County
Section 2I-3
Project FBD-0040(011)
Route FAP 304
District 8 Construction Funds

PROPOSAL SIGNATURE SHEET

The undersigned bidder hereby makes and submits this bid on the subject Proposal, thereby assuring the Department that all requirements of the Invitation for Bids and rules of the Department have been met, that there is no misunderstanding of the requirements of paragraph 3 of this Proposal, and that the contract will be executed in accordance with the rules of the Department if an award is made on this bid.

Firm Name _____

(IF AN INDIVIDUAL) Signature of Owner _____

Business Address _____

_____

Firm Name _____

By _____

(IF A CO-PARTNERSHIP) Business Address _____

_____
Name and Address of All Members of the Firm:

_____ _____

Corporate Name _____

By _____
Signature of Authorized Representative

(IF A CORPORATION)

_____
Typed or printed name and title of Authorized Representative

Attest _____
Signature

(IF A JOINT VENTURE, USE THIS SECTION FOR THE MANAGING PARTY AND THE SECOND PARTY SHOULD SIGN BELOW) Business Address _____

Corporate Name _____

By _____
Signature of Authorized Representative

(IF A JOINT VENTURE)

_____
Typed or printed name and title of Authorized Representative

Attest _____
Signature

Business Address _____

_____

If more than two parties are in the joint venture, please attach an additional signature sheet.

Illinois Department of Transportation

Return with Bid

Division of Highways
Proposal Bid Bond
(Effective November 1, 1992)

Item No. _____

Letting Date _____

KNOW ALL MEN BY THESE PRESENTS, That We _____

_____

as PRINCIPAL, and _____

_____ as SURETY, are held jointly, severally and firmly bound unto the STATE OF ILLINOIS in the penal sum of 5 percent of the total bid price, or for the amount specified in the bid proposal under "Proposal Guaranty" in effect on the date of the Invitation for Bids, whichever is the lesser sum, well and truly to be paid unto said STATE OF ILLINOIS, for the payment of which we bind ourselves, our heirs, executors, administrators, successors and assigns.

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH, that whereas, the PRINCIPAL has submitted a bid proposal to the STATE OF ILLINOIS, acting through the Department of Transportation, for the improvement designated by the Transportation Bulletin Item Number and Letting Date indicated above.

NOW, THEREFORE, if the Department shall accept the bid proposal of the PRINCIPAL; and if the PRINCIPAL shall, within the time and as specified in the bidding and contract documents, submit a DBE Utilization Plan that is accepted and approved by the Department; and if, after award by the Department, the PRINCIPAL shall enter into a contract in accordance with the terms of the bidding and contract documents including evidence of the required insurance coverages and providing such bond as specified with good and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof; or if, in the event of the failure of the PRINCIPAL to make the required DBE submission or to enter into such contract and to give the specified bond, the PRINCIPAL pays to the Department the difference not to exceed the penalty hereof between the amount specified in the bid proposal and such larger amount for which the Department may contract with another party to perform the work covered by said bid proposal, then this obligation shall be null and void, otherwise, it shall remain in full force and effect.

IN THE EVENT the Department determines the PRINCIPAL has failed to comply with any requirement as set forth in the preceding paragraph, then Surety shall pay the penal sum to the Department within fifteen (15) days of written demand therefor. If Surety does not make full payment within such period of time, the Department may bring an action to collect the amount owed. Surety is liable to the Department for all its expenses, including attorney's fees, incurred in any litigation in which it prevails either in whole or in part.

In TESTIMONY WHEREOF, the said PRINCIPAL and the said SURETY have caused this instrument to be signed by

their respective officers this _____ day of _____ A.D., _____ .

PRINCIPAL	**SURETY**
_____ (Company Name)	_____ (Company Name)
By _____ (Signature & Title)	By: _____ (Signature of Attorney-in-Fact)

Notary Certification for Principal and Surety

STATE OF ILLINOIS,
County of _____

I, _____ , a Notary Public in and for said County, do hereby certify that

_____ and _____
(Insert names of individuals signing on behalf of PRINCIPAL & SURETY)

who are each personally known to me to be the same persons whose names are subscribed to the foregoing instrument on behalf of PRINCIPAL and SURETY, appeared before me this day in person and acknowledged respectively, that they signed and delivered said instrument as their free and voluntary act for the uses and purposes therein set forth.

Given under my hand and notarial seal this _____ day of _____ A.D. _____

My commission expires _____ _____
Notary Public

In lieu of completing the above section of the Proposal Bid Form, the Principal may file an Electronic Bid Bond. By signing the proposal and marking the check box next to the Signature and Title line below, the Principal is ensuring the identified electronic bid bond has been executed and the Principal and Surety are firmly bound unto the State of Illinois under the conditions of the bid bond as shown above.

Electronic Bid Bond ID#	Company / Bidder Name	☐ Signature and Title

Illinois Department of Transportation

DBE Utilization Plan

(1) Policy

It is public policy that disadvantaged businesses as defined in 49 CFR Part 26 and the Special Provision shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with Federal or State funds. Consequently the requirements of 49 CFR Part 26 apply to this contract.

(2) Obligation

The contractor agrees to ensure that disadvantaged businesses as defined in 49 CFR Part 26 and the Special Provision have the maximum opportunity to participate in the performance of contracts or subcontracts financed in whole or in part with Federal or State funds. The contractor shall take all necessary and reasonable steps in accordance with 49 CFR Part 26 and the Special Provision to ensure that said businesses have the maximum opportunity to compete for and perform under this contract. The contractor shall not discriminate on the basis of race, color, national origin or sex in the award and performance of contracts.

(3) Project and Bid Identification

Complete the following information concerning the project and bid:

Route _____ Total Bid _____

Section _____ Contract DBE Goal _____ (Percent) _____ (Dollar Amount)

Project _____

County _____

Letting Date _____

Contract No. _____

Letting Item No. _____

(4) Assurance

I, acting in my capacity as an officer of the undersigned bidder (or bidders if a joint venture), hereby assure the Department that on this project my company : (check one)

☐ Meets or exceeds contract award goals and has provided documented participation as follows:

Disadvantaged Business Participation _____ percent

Attached are the signed participation statements, forms SBE 2025, required by the Special Provision evidencing availability and use of each business participating in this plan and assuring that each business will perform a commercially useful function in the work of the contract.

☐ Failed to meet contract award goals and has included good faith effort documentation to meet the goals and that my company has provided participation as follows:

Disadvantaged Business Participation _____ percent

The contract goals should be accordingly modified or waived. Attached is all information required by the Special Provision in support of this request including good faith effort. Also attached are the signed participation statements, forms SBE 2025, required by the Special Provision evidencing availability and use of each business participating in this plan and assuring that each business will perform a commercially useful function in the work of the contract.

_____
Company

By _____

Title _____

Date _____

The "as read" Low Bidder is required to comply with the Special Provision.

Submit only one utilization plan for each project. The utilization plan shall be submitted in accordance with the special provision.

Bureau of Small Business Enterprises
2300 South Dirksen Parkway
Springfield, Illinois 62764

Local Let Projects
Submit forms to the
Local Agency

The Department of Transportation is requesting disclosure of information that is necessary to accomplish the purpose as outlined under State and Federal law. Disclosure of this information is **REQUIRED**. Failure to provide any information will result in the contract not being awarded. This form has been approved by the State Forms Manager Center.

Illinois Department of Transportation

DBE Participation Statement

Subcontractor Registration _____ Letting _____

Participation Statement Item No. _____

(1) Instructions Contract _____

This form must be completed for each disadvantaged business participating in the Utilization Plan. This form shall be submitted in accordance with the special provision and will be attached to the Utilization Plan form.. If additional space is needed complete an additional form for the firm.

(2) Work

Pay Item No.	Description	Quantity	Unit Price	Total
			Total	

(3) Partial Payment Items

For any of the above items which are partial pay items, specifically describe the work and subcontract dollar amount:

(4) Commitment

The undersigned certify that the information included herein is true and correct, and that the DBE firm listed below has agreed to perform a commercially useful function in the work of the contract item(s) listed above and to execute a contract with the prime contractor. The undersigned further understand that no changes to this statement may be made without prior approval from the Department's Bureau of Small Business Enterprises and that complete and accurate information regarding actual work performed on this project and the payment therefore must be provided to the Department.

_____ _____

Signature for Prime Contractor Signature for DBE Firm

Title _____ Title _____

Date _____ Date _____

Contact _____ Contact Person _____

Phone _____ Phone _____

Firm Name _____ Firm Name _____

Address _____ Address _____

City/State/Zip _____ City/State/Zip _____

E _____

WC _____

The Department of Transportation is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under the state and federal law. Disclosure of this information is **REQUIRED**. Failure to provide any information will result in the contract not being awarded. This form has been approved by the State Forms Management Center.

PROPOSAL ENVELOPE

Illinois Department of Transportation

PROPOSALS

for construction work advertised for bids by the
Illinois Department of Transportation

Item No.	Item No.	Item No.

Submitted By:

Name:
Address:
Phone No.

Bidders should use an IDOT proposal envelope or affix this form to the front of a 10” x 13” envelope for the submittal of bids. If proposals are mailed, they should be enclosed in a second or outer envelope addressed to:

Engineer of Design and Environment - Room 326
Illinois Department of Transportation
2300 South Dirksen Parkway
Springfield, Illinois 62764

NOTICE

Individual bids, including Bid Bond and/or supplemental information if required, should be securely stapled.

CONTRACTOR OFFICE COPY OF CONTRACT SPECIFICATIONS

NOTICE

None of the following material needs to be returned with the bid package unless the special provisions require documentation and/or other information to be submitted.

Contract No. 76D29
JERSEY County
Section 2I-3
Project FBD-0040(011)
Route FAP 304
District 8 Construction Funds

Illinois Department of Transportation

SUBCONTRACTOR DOCUMENTATION

Public Acts 96-0795 and 96-0920, enacted substantial changes to the provisions of the Illinois Procurement Code (30 ILCS 500). Among the changes are provisions affecting subcontractors. The Contractor awarded this contract will be required as a material condition of the contract to implement and enforce the contract requirements applicable to subcontractors approved in accordance with article 108.01 of the Standard Specifications for Road and Bridge Construction.

If the Contractor seeks approval of subcontractors to perform a portion of the work, and approval is granted by the Department, the Contractor shall provide a copy of the subcontract to the Chief Procurement Officer within 20 calendar days after execution of the subcontract.

The subcontract shall contain the certifications required to be made by subcontractors pursuant to Article 50 of the Illinois Procurement Code. This Notice to Bidders includes a document incorporating all required subcontractor certifications and disclosures for use by the Contractor in compliance with this mandate. The document is entitled State Required Ethical Standards Governing Subcontractors.

RETURN WITH SUBCONTRACT

STATE ETHICAL STANDARDS GOVERNING SUBCONTRACTORS

Article 50 of the Illinois Procurement Code establishes the duty of all State chief procurement officers, State purchasing officers, and their designees to maximize the value of the expenditure of public moneys in procuring goods, services, and contracts for the State of Illinois and to act in a manner that maintains the integrity and public trust of State government. In discharging this duty, they are charged by law to use all available information, reasonable efforts, and reasonable actions to protect, safeguard, and maintain the procurement process of the State of Illinois.

The certifications hereinafter made by the subcontractor are each a material representation of fact upon which reliance is placed should the Department approve the subcontractor. The chief procurement officer may terminate or void the subcontract approval if it is later determined that the bidder or subcontractor rendered a false or erroneous certification.

Section 50-2 of the Illinois Procurement Code provides that every person that has entered into a multi-year contract and every subcontractor with a multi-year subcontract shall certify, by July 1 of each fiscal year covered by the contract after the initial fiscal year, to the responsible chief procurement officer whether it continues to satisfy the requirements of Article 50 pertaining to the eligibility for a contract award. If a contractor or subcontractor is not able to truthfully certify that it continues to meet all requirements, it shall provide with its certification a detailed explanation of the circumstances leading to the change in certification status. A contractor or subcontractor that makes a false statement material to any given certification required under Article 50 is, in addition to any other penalties or consequences prescribed by law, subject to liability under the Whistleblower Reward and Protection Act for submission of a false claim.

A. Bribery

1. The Illinois Procurement Code provides:

Section 50-5. Bribery.

(a) Prohibition. No person or business shall be awarded a contract or subcontract under this Code who:

(1) has been convicted under the laws of Illinois or any other state of bribery or attempting to bribe an officer or employee of the State of Illinois or any other state in that officer's or employee's official capacity; or

(2) has made an admission of guilt of that conduct that is a matter of record but has not been prosecuted for that conduct.

(b) Businesses. No business shall be barred from contracting with any unit of State or local government, or subcontracting under such a contract, as a result of a conviction under this Section of any employee or agent of the business if the employee or agent is no longer employed by the business and:

(1) the business has been finally adjudicated not guilty; or

(2) the business demonstrates to the governmental entity with which it seeks to contract, or which is signatory to the contract to which the subcontract relates, and that entity finds that the commission of the offense was not authorized, requested, commanded, or performed by a director, officer, or high managerial agent on behalf of the business as provided in paragraph (2) of subsection (a) of Section 5-4 of the Criminal Code of 1961.

(c) Conduct on behalf of business. For purposes of this Section, when an official, agent, or employee of a business committed the bribery or attempted bribery on behalf of the business and in accordance with the direction or authorization of a responsible official of the business, the business shall be chargeable with the conduct.

(d) Certification. Every bid submitted to and contract executed by the State, and every subcontract subject to Section 20-120 of the Procurement Code shall contain a certification by the contractor or the subcontractor, respectively, that the contractor or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the chief procurement officer may declare the related contract void if any certifications required by this Section are false. A contractor who makes a false statement, material to the certification, commits a Class 3 felony.

2. The contractor or subcontractor certifies that it is not barred from being awarded a contract under Section 50.5.

B. Felons

1. The Illinois Procurement Code provides:

Section 50-10. Felons. Unless otherwise provided, no person or business convicted of a felony shall do business with the State of Illinois or any State agency, or enter into a subcontract, from the date of conviction until 5 years after the date of completion of the sentence for that felony, unless no person held responsible by a prosecutorial office for the facts upon which the conviction was based continues to have any involvement with the business.

2. Certification. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Procurement Code shall contain a certification by the bidder or contractor or subcontractor, respectively, that the bidder, contractor, or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the chief procurement officer may declare the related contract void if any of the certifications required by this Section are false.

RETURN WITH SUBCONTRACT

C. Debt Delinquency

1. The Illinois Procurement Code provides:

Section 50-11 and 50-12. Debt Delinquency.

The contractor or bidder or subcontractor, respectively, certifies that it, or any affiliate, is not barred from being awarded a contract or subcontract under the Procurement Code. Section 50-11 prohibits a person from entering into a contract with a State agency, or entering into a subcontract, if it knows or should know that it, or any affiliate, is delinquent in the payment of any debt to the State as defined by the Debt Collection Board. Section 50-12 prohibits a person from entering into a contract with a State agency, or entering into a subcontract, if it, or any affiliate, has failed to collect and remit Illinois Use Tax on all sales of tangible personal property into the State of Illinois in accordance with the provisions of the Illinois Use Tax Act. The bidder or contractor or subcontractor, respectively, further acknowledges that the chief procurement officer may declare the related contract void if this certification is false or if the bidder, contractor, or subcontractor, or any affiliate, is determined to be delinquent in the payment of any debt to the State during the term of the contract.

D. Prohibited Bidders, Contractors and Subcontractors

1. The Illinois Procurement Code provides:

Section 50-10.5 and 50-60(c). Prohibited bidders, contractors and subcontractors.
The bidder or contractor or subcontractor, respectively, certifies in accordance with 30 ILCS 500/50-10.5 that no officer, director, partner or other managerial agent of the contracting business has been convicted of a felony under the Sarbanes-Oxley Act of 2002 or a Class 3 or Class 2 felony under the Illinois Securities Law of 1953 or if in violation of Subsection (c) for a period of five years from the date of conviction.. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Procurement Code shall contain a certification by the bidder, contractor, or subcontractor, respectively, that the bidder, contractor, or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the chief procurement officer shall declare the related contract void if any of the certifications completed pursuant to this Section are false.

E. Section 42 of the Environmental Protection Act

The bidder or contractor or subcontractor, respectively, certifies in accordance with 30 ILCS 500/50-12 that the bidder, contractor, or subcontractor, is not barred from being awarded a contract or entering into a subcontract under this Section which prohibits the bidding on or entering into contracts with the State of Illinois or a State agency, or entering into any subcontract, that is subject to the Procurement Code by a person or business found by a court or the Pollution Control Board to have committed a willful or knowing violation of Section 42 of the Environmental Protection Act for a period of five years from the date of the order. The bidder or contractor or subcontractor, respectively, acknowledges that the chief procurement officer may declare the contract void if this certification is false.

The undersigned, on behalf of the subcontracting company, has read and understands the above certifications and makes the certifications as required by law.

_____
Name of Subcontracting Company

_____ _____
Authorized Officer Date

RETURN WITH SUBCONTRACT

SUBCONTRACTOR DISCLOSURES

I. DISCLOSURES

A. The disclosures hereinafter made by the subcontractor are each a material representation of fact upon which reliance is placed. The subcontractor further certifies that the Department has received the disclosure forms for each subcontract.

The chief procurement officer may void the bid, contract, or subcontract, respectively, if it is later determined that the bidder or subcontractor rendered a false or erroneous disclosure. A contractor or subcontractor may be suspended or debarred for violations of the Procurement Code. Furthermore, the chief procurement officer may void the contract or subcontract.

B. Financial Interests and Conflicts of Interest

1. Section 50-35 of the Illinois Procurement Code provides that all subcontracts with a total value of $25,000 or more, from subcontractors identified in Section 20-120 of the Illinois Procurement Code, shall be accompanied by disclosure of the financial interests of the subcontractor. This disclosed information for the subcontractor, will be maintained as public information subject to release by request pursuant to the Freedom of Information Act, filed with the Procurement Policy Board, and shall be incorporated as a material term of the Prime Contractor's contract. Furthermore, pursuant to this Section, the Procurement Policy Board may recommend to allow or void a contract or subcontract based on a potential conflict of interest.

The financial interests to be disclosed shall include ownership or distributive income share that is in excess of 5%, or an amount greater than 60% of the annual salary of the Governor, of the subcontracting entity or its parent entity, whichever is less, unless the subcontractor is a publicly traded entity subject to Federal 10K reporting, in which case it may submit its 10K disclosure in place of the prescribed disclosure. If a subcontractor is a privately held entity that is exempt from Federal 10K reporting, but has more than 200 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any person or entity holding any ownership share that is in excess of 5%. The disclosure shall include the names, addresses, and dollar or proportionate share of ownership of each person making the disclosure, their instrument of ownership or beneficial relationship, and notice of any potential conflict of interest resulting from the current ownership or beneficial interest of each person making the disclosure having any of the relationships identified in Section 50-35 and on the disclosure form.
The current annual salary of the Governor is $177,412.00.

In addition, all disclosures shall indicate any other current or pending contracts, subcontracts, proposals, leases, or other ongoing procurement relationships the subcontracting entity has with any other unit of state government and shall clearly identify the unit and the contract, subcontract, proposal, lease, or other relationship.

2. Disclosure Forms. Disclosure Form A is attached for use concerning the individuals meeting the above ownership or distributive share requirements. Subject individuals should be covered each by one form. In addition, a second form (Disclosure Form B) provides for the disclosure of current or pending procurement relationships with other (non-IDOT) state agencies.

C. Disclosure Form Instructions

Form A Instructions for Financial Information & Potential Conflicts of Interest

If the subcontractor is a publicly traded entity subject to Federal 10K reporting, the 10K Report may be submitted to meet the requirements of Form A. If a subcontractor is a privately held entity that is exempt from Federal 10K reporting, but has more than 200 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any person or entity holding any ownership share that is in excess of 5%. If a subcontractor is not subject to Federal 10K reporting, the subcontractor must determine if any individuals are required by law to complete a financial disclosure form. To do this, the subcontractor should answer each of the following questions. A "YES" answer indicates Form A must be completed. If the answer to each of the following questions is "NO", then the NOT APPLICABLE STATEMENT on the second page of Form A must be signed and dated by a person that is authorized to execute contracts for the subcontracting company. Note: These questions are for assistance only and are not required to be completed.

1. Does anyone in your organization have a direct or beneficial ownership share of greater than 5% of the bidding entity or parent entity? YES ___ NO___
2. Does anyone in your organization have a direct or beneficial ownership share of less than 5%, but which has a value greater than 60% of the annual salary of the Governor? YES ___ NO___
3. Does anyone in your organization receive more than 60% of the annual salary of the Governor of the subcontracting entity's or parent entity's distributive income? YES ___ NO __

   (Note: Distributive income is, for these purposes, any type of distribution of profits. An annual salary is not distributive income.)
4. Does anyone in your organization receive greater than 5% of the subcontracting entity's or parent entity's total distributive income, but which is less than 60% of the annual salary of the Governor? YES ___ NO __

   (Note: Only one set of forms needs to be completed per person per subcontract even if a specific individual would require a yes answer to more than one question.)

A "YES" answer to any of these questions requires the completion of Form A. The subcontractor must determine each individual in the subcontracting entity or the subcontracting entity's parent company that would cause the questions to be answered "Yes". Each form must be signed and dated by a person that is authorized to execute contracts for your organization. **Photocopied or stamped signatures are not acceptable**. The person signing can be, but does not have to be, the person for which the form is being completed. The subcontractor is responsible for the accuracy of any information provided.

If the answer to each of the above questions is "NO", then the NOT APPLICABLE STATEMENT on page 2 of Form A must be signed and dated by a person that is authorized to execute contracts for your company.

RETURN WITH SUBCONTRACT

Form B: **Instructions for Identifying Other Contracts & Procurement Related Information**

Disclosure Form B must be completed for each subcontract submitted by the subcontracting entity. *Note: Checking the NOT APPLICABLE STATEMENT on Form A does not allow the subcontractor to ignore Form B. Form B must be completed, checked, and dated or the subcontract will not be approved.*

The Subcontractor shall identify, by checking Yes or No on Form B, whether it has any pending contracts, subcontracts, leases, bids, proposals, or other ongoing procurement relationship with any other (non-IDOT) State of Illinois agency. If "No" is checked, the subcontractor only needs to complete the check box on the bottom of Form B. If "Yes" is checked, the subcontractor must list all non-IDOT State of Illinois agency pending contracts, subcontracts, leases, bids, proposals, and other ongoing procurement relationships. These items may be listed on Form B or on an attached sheet(s). Contracts with cities, counties, villages, etc. are not considered State of Illinois agency contracts and are not to be included. Contracts or subcontracts with other State of Illinois agencies such as the Department of Natural Resources or the Capital Development Board must be included.

RETURN WITH SUBCONTRACT

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form A Subcontractor: Financial Information & Potential Conflicts of Interest Disclosure

Subcontractor Name		
Legal Address		
City, State, Zip		
Telephone Number	Email Address	Fax Number (if available)

Disclosure of the information contained in this Form is required by the Section 50-35 of the Illinois Procurement Code (30 ILCS 500). Subcontractors desiring to enter into a subcontract of a State of Illinois contract must disclose the financial information and potential conflict of interest information as specified in this Disclosure Form. This information shall become part of the publicly available contract file. This Form A must be completed for subcontracts with a total value of $25,000 or more, from subcontractors identified in Section 20-120 of the Illinois Procurement Code, and for all open-ended contracts. **A publicly traded company may submit a 10K disclosure (or equivalent if applicable) in satisfaction of the requirements set forth in Form A. See Disclosure Form Instructions.**

The current annual salary of the Governor is $177,412.00.

DISCLOSURE OF FINANCIAL INFORMATION

1. Disclosure of Financial Information. The individual named below has an interest in the SUBCONTRACTOR (or its parent) in terms of ownership or distributive income share in excess of 5%, or an interest which has a value of more than 60% of the annual salary of the Governor. **(Make copies of this form as necessary and attach a separate Disclosure Form A for each individual meeting these requirements)**

FOR INDIVIDUAL (type or print information)

NAME: _____

ADDRESS _____

_____

Type of ownership/distributable income share:

stock _____ sole proprietorship _____ Partnership _____ other: (explain on separate sheet):

% or $ value of ownership/distributable income share: _____

2. Disclosure of Potential Conflicts of Interest. Check "Yes" or "No" to indicate which, if any, of the following potential conflict of interest relationships apply. If the answer to any question is "Yes", please attach additional pages and describe.

(a) State employment, currently or in the previous 3 years, including contractual employment of services.

Yes ___ No __

If your answer is yes, please answer each of the following questions.

1. Are you currently an officer or employee of either the Capitol Development Board or the Illinois State Toll Highway Authority? Yes ___ No __

2. Are you currently appointed to or employed by any agency of the State of Illinois? If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor, provide the name the State agency for which you are employed and your annual salary. _____

_____

3. If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor, are you entitled to receive (i) more than 7 1/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of 100% of the annual salary of the Governor?
   Yes ___No __

4. If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor, are you and your spouse or minor children entitled to receive (i) more than 15 % in the aggregate of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of two times the salary of the Governor? Yes ___No __

(b) State employment of spouse, father, mother, son, or daughter, including contractual employment services in the previous 2 years.
   Yes ___No __

If your answer is yes, please answer each of the following questions.

1. Is your spouse or any minor children currently an officer or employee of the Capitol Development Board or the Illinois State Toll Highway Authority? Yes ___No __

2. Is your spouse or any minor children currently appointed to or employed by any agency of the State of Illinois? If your spouse or minor children is/are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, provide the name of your spouse and/or minor children, the name of the State agency for which he/she is employed and his/her annual salary. _____
   _____

3. If your spouse or any minor children is/are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, are you entitled to receive (i) more than 71/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of of 100% of the annual salary of the Governor? Yes ___No __

4. If your spouse or any minor children are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, are you and your spouse or minor children entitled to receive (i) more than 15 % in the aggregate of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of two times the salary of the Governor?
   Yes ___No __

(c) Elective status; the holding of elective office of the State of Illinois, the government of the United States, any unit of local government authorized by the Constitution of the State of Illinois or the statutes of the State of Illinois currently or in the previous 3 years. Yes ___No __

(d) Relationship to anyone holding elective office currently or in the previous 2 years; spouse, father, mother, son, or daughter. Yes ___No __

(e) Appointive office; the holding of any appointive government office of the State of Illinois, the United States of America, or any unit of local government authorized by the Constitution of the State of Illinois or the statutes of the State of Illinois, which office entitles the holder to compensation in excess of the expenses incurred in the discharge of that office currently or in the previous 3 years. Yes ___No __

(f) Relationship to anyone holding appointive office currently or in the previous 2 years; spouse, father, mother, son, or daughter. Yes ___No __

(g) Employment, currently or in the previous 3 years, as or by any registered lobbyist of the State government.
   Yes ___No __

(h) Relationship to anyone who is or was a registered lobbyist in the previous 2 years; spouse, father, mother, son, or daughter. Yes ___ No __

(i) Compensated employment, currently or in the previous 3 years, by any registered election or reelection committee registered with the Secretary of State or any county clerk of the State of Illinois, or any political action committee registered with either the Secretary of State or the Federal Board of Elections.
Yes ___ No __

(j) Relationship to anyone; spouse, father, mother, son, or daughter; who was a compensated employee in the last 2 years by any registered election or re-election committee registered with the Secretary of State or any county clerk of the State of Illinois, or any political action committee registered with either the Secretary of State or the Federal Board of Elections.
Yes ___ No __

---

3. Communication Disclosure.

Disclose the name and address of each lobbyist and other agent of the bidder or offeror who is not identified in Section 2 of this form, who is has communicated, is communicating, or may communicate with any State officer or employee concerning the bid or offer. This disclosure is a continuing obligation and must be promptly supplemented for accuracy throughout the process and throughout the term of the contract. If no person is identified, enter "None" on the line below:

Name and address of person(s): _____

_____

_____

_____

RETURN WITH SUBCONTRACT

4. Debarment Disclosure. For each of the persons identified under Sections 2 and 3 of this form, disclose whether any of the following has occurred within the previous 10 years: debarment from contracting with any governmental entity; professional licensure discipline; bankruptcies; adverse civil judgments and administrative findings; and criminal felony convictions. This disclosure is a continuing obligation and must be promptly supplemented for accuracy throughout the procurement process and term of the contract. If no person is identified, enter "None" on the line below:

Name of person(s): _____

Nature of disclosure: _____

_____

_____

_____

APPLICABLE STATEMENT

This Disclosure Form A is submitted on behalf of the INDIVIDUAL named on previous page. Under penalty of perjury, I certify the contents of this disclosure to be true and accurate to the best of my knowledge.

Completed by: ☐ _____ _____

Signature of Individual or Authorized Officer — Date

NOT APPLICABLE STATEMENT

Under penalty of perjury, I have determined that no individuals associated with this organization meet the criteria that would require the completion of this Form A.

This Disclosure Form A is submitted on behalf of the SUBCONTRACTOR listed on the previous page.

☐ _____ _____

Signature of Authorized Officer — Date

RETURN WITH SUBCONTRACT

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form B
Subcontractor: Other Contracts & Procurement Related Information Disclosure

Subcontractor Name		
Legal Address		
City, State, Zip		
Telephone Number	Email Address	Fax Number (if available)

Disclosure of the information contained in this Form is required by the Section 50-35 of the Illinois Procurement Act (30 ILCS 500). This information shall become part of the publicly available contract file. This Form B must be completed for subcontracts with a total value of $25,000 or more, from subcontractors identified in Section 20-120 of the Illinois Procurement Code, and for all open-ended contracts.

DISCLOSURE OF OTHER CONTRACTS, SUBCONTRACTS, AND PROCUREMENT RELATED INFORMATION

1. Identifying Other Contracts & Procurement Related Information. The SUBCONTRACTOR shall identify whether it has any pending contracts, subcontracts, including leases, bids, proposals, or other ongoing procurement relationship with any other State of Illinois agency: Yes ___ No __
If "No" is checked, the subcontractor only needs to complete the signature box on the bottom of this page.

2. If "Yes" is checked. Identify each such relationship by showing State of Illinois agency name and other descriptive information such as bid or project number (attach additional pages as necessary). SEE DISCLOSURE FORM INSTRUCTIONS:

THE FOLLOWING STATEMENT MUST BE CHECKED

☐ _____ _____
Signature of Authorized Officer Date

Illinois Department of Transportation

NOTICE TO BIDDERS

1. **TIME AND PLACE OF OPENING BIDS.** Sealed proposals for the improvement described herein will be received by the Department of Transportation at the Harry R. Hanley Building, 2300 South Dirksen Parkway, in Springfield, Illinois until 10:00 o'clock a.m., January 20, 2012. All bids will be gathered, sorted, publicly opened and read in the auditorium at the Department of Transportation's Harry R. Hanley Building shortly after the 10:00 a.m. cut off time.

2. **DESCRIPTION OF WORK**. The proposed improvement is identified and advertised for bids in the Invitation for Bids as:

   Contract No. 76D29
   JERSEY County
   Section 2I-3
   Project FBD-0040(011)
   Route FAP 304
   District 8 Construction Funds

This project consists of constructing a new ferry barge and pushboat to carry passenger vehicles across the Illinois River at Brussels.

3. **INSTRUCTIONS TO BIDDERS**. (a) This Notice, the invitation for bids, proposal and letter of award shall, together with all other documents in accordance with Article 101.09 of the Standard Specifications for Road and Bridge Construction, become part of the contract. Bidders are cautioned to read and examine carefully all documents, to make all required inspections, and to inquire or seek explanation of the same prior to submission of a bid.

   (b) State law, and, if the work is to be paid wholly or in part with Federal-aid funds, Federal law requires the bidder to make various certifications as a part of the proposal and contract. By execution and submission of the proposal, the bidder makes the certification contained therein. A false or fraudulent certification shall, in addition to all other remedies provided by law, be a breach of contract and may result in termination of the contract.

4. **AWARD CRITERIA AND REJECTION OF BIDS**. This contract will be awarded to the lowest responsive and responsible bidder considering conformity with the terms and conditions established by the Department in the rules, Invitation for Bids and contract documents. The issuance of plans and proposal forms for bidding based upon a prequalification rating shall not be the sole determinant of responsibility. The Department reserves the right to determine responsibility at the time of award, to reject any or all proposals, to readvertise the proposed improvement, and to waive technicalities.

By Order of the
Illinois Department of Transportation

Ann L. Schneider,
Secretary

INDEX
FOR
SUPPLEMENTAL SPECIFICATIONS
AND RECURRING SPECIAL PROVISIONS

Adopted January 1, 2012

This index contains a listing of SUPPLEMENTAL SPECIFICATIONS and frequently used RECURRING SPECIAL PROVISIONS.

SUPPLEMENTAL SPECIFICATIONS

Std. Spec. Sec. Page No.

No Supplemental Specifications this year.

RECURRING SPECIAL PROVISIONS

The following RECURRING SPECIAL PROVISIONS indicated by an "X" are applicable to this contract and are included by reference:

CHECK SHEET #			PAGE NO.
1	X	Additional State Requirements for Federal-Aid Construction Contracts (Eff. 2-1-69) (Rev. 1-1-10)	1
2	X	Subletting of Contracts (Federal-Aid Contracts) (Eff. 1-1-88) (Rev. 5-1-93)	4
3	X	EEO (Eff. 7-21-78) (Rev. 11-18-80)	5
4		Specific Equal Employment Opportunity Responsibilities Non Federal-Aid Contracts (Eff. 3-20-69) (Rev. 1-1-94)	15
5		Required Provisions - State Contracts (Eff. 4-1-65) (Rev. 1-1-12)	20
6		Asbestos Bearing Pad Removal (Eff. 11-1-03)	25
7		Asbestos Waterproofing Membrane and Asbestos Hot-Mix Asphalt Surface Removal (Eff. 6-1-89) (Rev. 1-1-09)	26
8		Haul Road Stream Crossings, Other Temporary Stream Crossings, and In-Stream Work Pads (Eff. 1-2-92) (Rev. 1-1-98)	27
9		Construction Layout Stakes Except for Bridges (Eff. 1-1-99) (Rev. 1-1-07)	28
10		Construction Layout Stakes (Eff. 5-1-93) (Rev. 1-1-07)	31
11		Use of Geotextile Fabric for Railroad Crossing (Eff. 1-1-95) (Rev. 1-1-07)	34
12		Subsealing of Concrete Pavements (Eff. 11-1-84) (Rev. 1-1-07)	36
13		Hot-Mix Asphalt Surface Correction (Eff. 11-1-87) (Rev. 1-1-09)	40
14		Pavement and Shoulder Resurfacing (Eff. 2-1-00) (Rev. 1-1-09)	42
15		PCC Partial Depth Hot-Mix Asphalt Patching (Eff. 1-1-98) (Rev. 1-1-07)	43
16		Patching with Hot-Mix Asphalt Overlay Removal (Eff. 10-1-95) (Rev. 1-1-07)	45
17		Polymer Concrete (Eff. 8-1-95) (Rev. 1-1-08)	46
18		PVC Pipeliner (Eff. 4-1-04) (Rev. 1-1-07)	48
19		Pipe Underdrains (Eff. 9-9-87) (Rev. 1-1-07)	49
20		Guardrail and Barrier Wall Delineation (Eff. 12-15-93) (Rev. 1-1-12)	50
21		Bicycle Racks (Eff. 4-1-94) (Rev. 1-1-12)	54
22		Temporary Modular Glare Screen System (Eff. 1-1-00) (Rev. 1-1-07)	56
23		Temporary Portable Bridge Traffic Signals (Eff. 8-1-03) (Rev. 1-1-07)	58
24		Work Zone Public Information Signs (Eff. 9-1-02) (Rev. 1-1-07)	60
25		Night Time Inspection of Roadway Lighting (Eff. 5-1-96)	61
26		English Substitution of Metric Bolts (Eff. 7-1-96)	62
27		English Substitution of Metric Reinforcement Bars (Eff. 4-1-96) (Rev. 1-1-03)	63
28		Calcium Chloride Accelerator for Portland Cement Concrete (Eff. 1-1-01)	64
29		Portland Cement Concrete Inlay or Overlay for Pavements (Eff. 11-1-08) (Rev. 1-1-12)	65
30		Quality Control of Concrete Mixtures at the Plant(Eff. 8-1-00) (Rev. 1-1-11)	68
31		Quality Control/Quality Assurance of Concrete Mixtures(Eff. 4-1-92) (Rev. 1-1-11)	76

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STATE OF ILLINOIS

SPECIAL PROVISIONS

The following Special Provisions supplement the "Standard Specifications for Road and Bridge Construction," adopted January 1, 2012, the latest edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways," and the "Manual of Test Procedures for Materials" in effect on the date of invitation for bids, and the Supplemental Specifications and Recurring Special Provisions indicated on the Check Sheet included herein which apply to and govern the construction of FAP Route 304 (IL100); Project FBD-0040 (011); Section 2I-3; Jersey County; Contract No. 76D29 and in case of conflict with any part or parts of said Specifications, the said Special Provisions shall take precedence and shall govern.

LOCATION OF PROJECT

New vessel construction for Barge Ferry and Pushboat for the Brussels Ferry West of Grafton, IL.

DESCRIPTION OF PROJECT

This project consists of the construction and delivery of new Barge Ferry and Pushboat to carry passengers and vehicles across the Illinois River at Brussels, IL. The intent of these provisions, together with the accompanying contract drawings and contract guidance drawings, is to show the design of a new Barge Ferry and Pushboat. This ferry system is owned and operated by the Illinois Department of Transportation (IDOT) Region 5 District 8. This project also requires the Contractor to take possession and ownership of surplused assets of the Department's ferry fleet.

The provision "New Vessel Construction for Barge Ferry and Pushboat" contains information related to the new vessels. Part I sets forth the basic characteristics of the design and general provisions for its construction. Part II sets forth technical requirements of the design and its construction.

PREQUALIFICATION

This project will only be awarded to contractors who are prequalified with the Illinois Department of Transportation in the following major type of construction:

- Marine Construction

TERMS AND DEFINITIONS

ABS American Bureau of Shipping
Authoritative Agency Includes the following agencies USCG, ABS, State of Illinois, EPA, OSHA, U.S. Department of Homeland Security

ASTM American Society for Testing and Materials
"The Ferry" is defined as the Barge Ferry and Pushboat combination connected at the midships tow linkage, operating as single passenger and vehicle ferry.
IDOT The Department of Transportation of the State of Illinois with principal offices of business at Springfield, when the State is the awarding authority
IEEE Institute of Electrical and Electronic Engineers
NEMA National Electrical Manufacturer's Association
OCMI USCG Officer In Charge of Marine Inspection
Operator is the Master for control and operation from the Pilothouse or a trained Deckhand for local equipment operation from the Barge Ferry control stations or on the Pushboat, or by the crew, Master and Deckhand, combined efforts.
"Or equal" shall mean a component which has been approved by the Owner (or Owner's Representative) for substitution because, in the opinion of the Owner (or Owner's Representative), it has the same performance characteristics, quality, reliability, and durability as the component which is specified by name.
"Owner furnished material" means items of equipment and outfit that are acquired by IDOT, in either new or used condition, apart from the contract with the Contractor. This material is to be installed by the Contractor unless stipulated otherwise in the contractual documents. All items of owner furnished material that are incorporated in the design are indicated as "owner furnished material" in the Contract Documents.
PT Port side of vessel
STBD Starboard side of vessel
SAE Society of Automotive Engineers
SNAME Society of Naval Architect and Marine Engineers
SSPC Ship Structures Painting Council
"The Contractor" is the successful bidder who enters into a contract to build the Ferry and who shall then have the responsibility for the construction of the ferry.
"The Owner" is The Department of Transportation of the State of Illinois with principal offices of business at Springfield, when the State is the awarding authority.
"The Owner's Representative" is a designated employee of IDOT or a consultant contractually engaged by IDOT to oversee the construction and to represent the interests of IDOT during the period of construction and testing of the Barge Ferry and Pushboat.
UL Underwriters Laboratory
USCG United States Coast Guard

NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSH BOAT

PART I - BASIC CHARACTERISTICS AND GENERAL PROVISIONS

1. General

All sections of this specification are applicable to both the Barge Ferry and the Pushboat unless specifically noted. The new Barge Ferry will be operated with a Pushboat that is attached to a fixed midships tow linkage. The Pushboat provides main propulsion, electrical power, and support services to safely maneuver and transport the Barge Ferry between landings on either side of the Illinois River at the Brussels and/or Kampsville ferry crossings. The new Pushboat will have twin marine propulsion diesel engines, two (2) Kort nozzle, two (2) propellers with four (4) flanking, two (2) steering rudders, and one auxiliary diesel generator that provides 120/240 volt A.C., 1-phase, 60 Hertz and 12 volt D.C. electrical power.

2. Omitted

3. Principal Dimensions and Characteristics

3.1 Barge Ferry

Extreme length, including ramps	168'-0"
Length over deck	136'-0"
Beam (molded)	35'-0"
Depth (molded)	5'-5"
Lightship weight (estimated)	165.90 LT approx.
Draft corresponding to lightship weight (mean molded)	1.642 ft approx. (fresh water)
Deadweight (maximum load)	151.29 LT approx.
Displacement, full load (estimated)	317.19 LT approx
Draft, full load (mean molded)	3'- 0" approx. (fresh water)
Propulsion power: Pushboat Marine Diesel Engine	See Pushboat Data
Service speed	10 MPH = 8.7 knots
Passenger capacity	149
Crew	1 Deckhand
Gross tonnage	76 GRT
Vehicles:	
automobile capacity	21 autos
total vehicle payload	168,500 lbs
single vehicle load limit (All lanes)	88,800 lbs
maximum axle load (All lanes)	20,000 lbs

3.2 Pushboat

Length over deck	60'-0"
Length between headlogs (molded)	60'-0"
Beam, molded	18 ft
Beam, overall	18'-3/4"
Depth (molded)	7'-6"
Lightship weight (preliminary)	65.2 LT
Displacement, full load (estimated)	80.3 LT
Draft, full load (mean molded)	4.52'
Draft, max navigational	5.5'
Propulsion power: Marine Diesel Engine	2 x 300 = 600 HP
Service speed	10 MPH = 8.7 knots
Passenger capacity	0
Crew	1 Master
Gross tonnage (optional simplified method 46 CFR 69.05)	68 GRT approx.

4. Barge Ferry Capacity

The Barge Ferry shall have the capacity to carry twenty one automobiles, or a combination of vehicles, including automobiles, trucks, trailers, and buses. The deck shall be divided into three marked vehicle lanes. The center lane shall be 8ft-10in wide and the port and starboard lanes shall be 8ft-8in wide. The vehicle lanes are separated by 17in. wide access path between center lane and the port and starboard lanes as shown on the Barge Ferry paint scheme, drawing 631-201. The Barge Ferry shall have the capacity and be certified to carry, together with the vehicles, 149 passengers.

The Barge Ferry structure is designed for the following vehicle loading:

- The Barge Ferry shall have the capacity to carry a total vehicle payload (combined gross weight of all vehicles on board) of 168,500 pounds.
- The maximum individual vehicle gross weight is restricted to a maximum of 88,800 pounds. This will allow for a full size truck with one car fwd and one car aft in each lane, or 7 cars/pickup trucks in each lane for a total of 21 vehicles.
- The entire deck shall have adequate strength over all three lanes to support a 20,000-pound axle load. The strength of the hull and ramps shall be adequate to support axle loads of 20,000 pounds.

5. Operating Scenario

The Ferry operates 24 hours per day, year-round. On rare occasions the operation is suspended because of extreme high water conditions or severe build-up of ice on the river.

The Barge Ferry and Pushboat combination shall be operable as a single Ferry system by a two person crew consisting of a Master and one Deckhand. There will be no shore side personnel involved in the day-to-day operation. The Pushboat machinery spaces will be unattended and capable of being monitored from the Pilothouse.

The Master will control the propulsion (starting, stopping, steering, and speed) from a central control console located in the pilothouse. The center console arrangement will allow the operator to comfortably see and manipulate the controls from a standing position or sitting in a pilot chair. The arrangement will allow the operator to sit or stand aft of the forward center console, at will, and to easily switch positions within the pilothouse. The Master will utilize the Pushboat maneuvering features of the twin propulsion drives, flanking and steering rudders to maneuver the Barge Ferry and achieve good alignment of the Ferry with the landings. The operator can pivot the Pushboat about a single fixed midship Tow Linkage, which is a permanent part of the Barge Ferry, to change directions for river crossings. After pivoting, the Pushboat stern latch is engaged to firmly connect the Pushboat to the barge.

Control of the ramp vertical adjustment is manual by adjusting cable support turnbuckles. Once set, height adjustments of ramps are expected to be infrequent. Each safety barrier is controlled by two actuation levers located at a station next to the respective safety barrier. One actuator is used to lock/unlock the barrier and other lever used to raise and lower the safety barrier Each swing gate is manually latched/unlatched and moved.

While the Ferry is underway, all passengers and vehicles will ride on the deck, never on the ramps. Passengers will remain in or next to their vehicles throughout the crossing; both safety barriers are kept in the raised (closed and latched) position until docked and ready for disembarkation.

6. Landing Procedure (Approach, Unloading, Loading, Departure)

The Ferry will contact the shore landing ramp which is connected to the paved roadway at each landing. The Master will maneuver the Ferry until the ferry ramp is aligned and makes contact with the shore landing ramp. Steady contact will be maintained by slight forward thrust by the Pushboat and a port or starboard tie off between Barge Ferry mooring attachment and shore landing ramp cleat/bollard.

Ramp height adjustment will be preset for the ferry landings and can be adjusted by ratchet type turnbuckles installed in lift chambers. For most loads consisting of automobiles and/or light trucks, the landing can be made quickly if the ramp is adjusted for Barge Ferry draft so that its outer end is positioned for sufficient height above the water surface for alignment to the shore landing ramp.

After the ferry is landed, the Pushboat propulsion drives will continue to apply thrust, to hold the Barge Ferry onto the shore landing ramp. The Ferry will be tied-off to shore for loading and unloading vehicles. Note that the ramps are not designed to support vehicles unless the Barge Ferry ramp is resting securely against the shore landing ramp. The Barge Ferry ramp must be securely landed and tied-off before lowering the vehicle safety barrier, opening the swing gates, and during vehicle movement over it.

After the ramp is firmly landed, the vehicle safety barrier is lowered, pneumatically, to the horizontal, retracted position atop the Barge Ferry main ramp section. The operator will then open the swing gates and direct vehicles to unload, one at a time over the ramp. When the last vehicle to offload has cleared the landing and if there are vehicles waiting at the landing, the operator will direct the traffic loading. It is recommended that the Ferry be loaded in the center lane first, and then evenly load on the outboard lanes.

Prior to departure, the swing gates are closed and the vehicle safety barrier on the inshore ramp is raised and latched. These two steps are accomplished by the deckhand using two levers which are located at both port and starboard sides of each safety barrier.

7. Service Environment

The Ferry operation will be conducted year-round, during both daylight and darkness, but only when the water level at the crossing site is within the normal operating range for safe landings. For design purposes the ferry shall be operable whenever outside air temperature is in the range between -20 F and 110 F (dry bulb). River water temperature, for design purposes, shall be assumed to range between 32 F and 80 F. The Illinois River ferry crossing distance typically varies from about 1400-1500 feet depending on water level.

8. Applicable Regulations

8.1 General

The Barge Ferry and Pushboat will not be Classed under ABS or any other classification society. The Pushboat falls into the “Uninspected Vessel” category (46CFR Subchapter C) of USCG Regulations. The Barge Ferry is to be built and inspected specifically for barge ferry operations at the Brussels and Kampsville Illinois River ferry sites. It will be certificated to carry 149 passengers.

Stability calculations and a stability report have been prepared by Art Anderson Associates as part of the contract design project.

The Contractor shall be responsible for obtaining tonnage measurement and official documentation from the U.S. government.

8.2 Barge Ferry

The Barge Ferry will be built and certified to the applicable rules of the U.S. Coast Guard 46 CFR Subchapter T Small Passenger Vessels (Under 100 Gross Tons) Parts 175 – 185 and structural requirements of ABS *Rules for Building and Classing Steel Barges* – 2009, here after referred to as ABS Steel Barge Rules, for a double-ended rake barge with deck cargo. The Barge Ferry will be inspected by the cognizant USCG OCMI for issuance of a Certificate of Inspection.

8.3 Pushboat

The Pushboat will be built following the guidance provided in the ABS *Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways* – 2007, here after referred to as the "ABS River Rules". USCG Regulations, applicable to the Pushboat are in 46 CFR 27 – "Towing Vessels". In addition, refer to USCG Guidance for Uninspected Towing Vessels.

The Pushboat shall be built to the following specific requirements in the ABS River Rules

Part 2 - Materials and Welding

Part 3 / Chapter 2 / Section 4 – Towboats

Part 3 / Chapter 2 / Section 6 - Weld Design

Part 4 / Chapter 3 - Pumps and Piping Systems

8.4 Electrical

For the Barge Ferry and Pushboat electrical installations the Contractor will comply with requirements of USCG 46CFR Subchapter J, IEEE No. 45 standards, NFPA 70. In addition the Barge Ferry electrical system installation shall comply with 46CFR Subchapter T. The Pushboat electrical installations shall also comply with ABS Rules for Building and Classing Steel Vessels Under 90 Meters Part 4, Chapter 6, Section 5.7 "Electrical Plants of Less Than 75 kW".

9. Contractual Technical Documents

The following contract drawings and contract guidance drawings are furnished in conjunction with this specification, and together with this specification, constitute the technical portion of the Contract Documents.

9.1 Contract Drawing

Dwg No	Drawing Title
611-201	TOW LINKAGE - STRUCTURE
611-202	TOW LINKAGE - DETAILS
611-203	TOW LINKAGE - LATCH
839-101	LINES AND OFFSETS - PUSHBOAT
839-201	LINES AND OFFSETS - BARGE

9.2 Contract Guidance Drawings

9.2.1 PUSHBOAT DRAWINGS

Dwg No	Drawing Title
801-101	GENERAL ARRANGEMENT - PUSHBOAT
100-101	STRUCTURAL GENERAL NOTES - PUSHBOAT
111-101	SHELL PLATING AND FRAMING - PUSHBOAT
116-101	LONGITUDINAL STRUCTURE - CENTERLINE & DETAILS
116-102	LONGITUDINAL GIRDERS
117-101	TRANSVERSE FRAMING - FR 0 TO 3
117-102	TRANSVERSE FRAMING - FR 4 TO 7
117-103	TRANSVERSE FRAMING - FR 8 TO 12
117-104	TRANSVERSE FRAMING - FR 13 TO 16
117-105	TRANSVERSE FRAMING - FR 17 TO 20
117-106	TRANSVERSE FRAMING - FR 21 TO 24
117-107	TRANSVERSE FRAMING - FR 25 TO 28
117-108	TRANSVERSE FRAMING – TRANSOM
131-101	MAIN DECK PLATING AND FRAMING - PUSHBOAT
151-101	DECKHOUSE STRUCTURE
152-101	PILOTHOUSE STRUCTURE
167-101	HATCHES AND RAISED PLATFORM
233-101	MACHINERY ARRANGEMENT - PLANS
233-102	MACHINERY ARRANGEMENT - SECTIONS AND ELEVATION
243-101	PROPELLER SHAFTING AND SUPPORT
243-102	PROPELLER SHAFTING AND SUPPORT DETAILS
256-101	MACHINERY COOLING SYSTEM PIPING – DIAGRAM
256-102	MACHINERY COOLING SYSTEM PIPING – DETAILS
259-101	ENGINE EXHAUST PIPING
259-102	ENGINE EXHAUST PIPING DETAILS
321-101	ELECTRICAL GENERAL NOTES – PUSHBOAT
321-102	DC ELECTRICAL ONE LINE DIAGRAM - PUSHBOAT
321-103	AC ELECTRICAL ONE LINE DIAGRAM - PUSHBOAT
401-101	COMMUNICATION SYSTEMS AND FIRE ALARM
422-101	NAVIGATION LIGHTS AND STAFF - PUSHBOAT
500-101	MECHANICAL AND OUTFIT GENERAL NOTES - PUSHBOAT
512-101	HVAC ARRANGEMENT AND DETAILS
512-102	HVAC ARRANGEMENT AND DETAILS –ENGINE ROOM
529-101	FIREMAIN AND BILGE PIPING - PUSHBOAT
541-101	DIESEL FUEL PIPING - DIAGRAM
541-102	DIESEL FUEL PIPING - DETAILS
543-101	LUBE OIL TANK FABRICATION AND INSTALLATION
551-101	COMPRESSED AIR SYSTEM

556-101	HYDRAULIC STEERING SYSTEM DIAGRAM
562-101	RUDDERS AND STEERING GEAR
562-102	RUDDERS AND STEERING GEAR - DETAILS
562-103	RUDDERS AND STEERING GEAR – DETAILS2
611-101	DECK FITTINGS, RAILINGS, AND LADDERS
611-102	DECK FITTINGS, RAILINGS, AND LADDERS - DETAILS
621-101	DECKHOUSE ARRANGEMENT AND INTERIOR DETAILS
621-102	PILOTHOUSE ARRANGEMENT AND INTERIOR DETAILS

9.2.2 BARGE FERRY DRAWINGS

Dwg No	Drawing Title
801-201	GENERAL ARRANGEMENT - BARGE
839-202	BARGE TONNAGE PLAN
100-201	STRUCTURAL GENERAL NOTES - BARGE
100-202	STRUCTURAL - DETAILS
111-201	SHELL PLATING AND FRAMING - BARGE
116-201	LONGITUDINAL STRUCTURE - BARGE
117-201	TRANSVERSE FRAMES - BARGE
122-201	TRANSVERSE BULKHEADS - BARGE
180-201	MISCELLANEOUS FOUNDATIONS - BARGE
422-201	NAVIGATION AND DECK LIGHTS
500-201	MECHANICAL AND OUTFIT GENERAL NOTES - BARGE
529-201	FIREMAIN AND BILGE PIPING - BARGE
551-201	COMPRESSED AIR SYSTEM PIPING
555-201	FIRE PROTECTION AND LIFE SAVING EQUIPMENT PLAN
575-201	SAFETY BARRIER - STRUCTURE
575-202	SAFETY BARRIER - DETAILS
573-203	SWING GATE – ARRANGEMENT AND DETAILS
584-201	RAMPS AND SUSPENSION SYSTEM - STRUCTURE
584-202	RAMPS AND SUSPENSION SYSTEM - DETAILS
623-201	DECK FITTINGS AND LADDERS - BARGE
623-202	DECK FITTINGS AND RAILINGS - BARGE
631-201	PAINT SCHEME – BARGE

9.3 Supplemental Vendor's Drawings:

Dwg No	Drawing Title
1002155	Pushboat main propulsion gear: Twin Disc MG-5091 DC
1016428C	Twin Disc Mounting Bracket Kit for MG5091 (DC)
RE524479	John Deere PowerTech 8.1 L Engine 6081AFM75(KC)
M30CW KC D-4114	Northern Lights Diesel Generator Installation Dimensions

The listed contract drawings for vessel lines, tow linkage and tow latch must be conformed to precisely. All tow linkage and latch design deviations must have prior approval by the Owner. The tow linkage and tow latch are designed to ensure compatibility with the rest of IDOT Brussels ferry fleet.

The contract guidance drawings illustrate an acceptable design, from which the Contractor may deviate, with the written approval of the Owner (or Owner's Representative). In the event that the Contractor does deviate from a contract guidance drawing, then the Contractor shall prepare an "as built" drawing showing the features as they are actually built. The supplemental vendor's drawings are for reference in providing mounting, piping and wiring connections for machinery.

Deviations from this specification shall be permissible only with the written approval of the Owner (or Owner's Representative). This includes substitution of equipment specified by make and model where the phrase "or equal" is included.

This written specification and the drawings enumerated above are intended to complement each other. Anything shown on the drawings and not in this specification shall be deemed to be included in both. In the event that the contract guidance drawings and this specification contradict each other on any point, it shall be the Contractor's responsibility to confirm the actual intent by contacting the Owner (or Owner's Representative).

Note that the technical specifications (Part II of this document) are organized by sections which are numbered generally in accordance with the standard Ship's Work Breakdown Structure (SWBS).

10. Technical Data Requirements

The Contractor shall provide three copies of all instruction manuals, maintenance manuals, parts lists, and vendor's drawings for all machinery, electrical, and electronic components which are furnished by the vendors of equipment that is incorporated in the Barge Ferry and Pushboat. In the case of the propulsion engines and reductions gears, the Contractor shall be responsible for obtaining three copies of comprehensive technical manuals for the specific engine and reduction gear model, the specific options and accessories that are incorporated and also the specific EC300 control system.

In the event that the Contractor deviates from the contract guidance drawings, the Contractor shall then provide, in reproducible format all of the as-built plans that are necessary to accurately depict the construction and arrangement of those features that deviate from the contract guidance drawings.

The Contractor shall provide final as-built installation drawings in Auto-CAD format, reflecting differences, if any from original design configuration.

11. Material

All materials and equipment incorporated in the vessel shall be new and of good marine quality. Any components in which defects become evident before or after installation shall be repaired or replaced to the satisfaction of the Owner (or Owner's Representative). All steel plate and shapes used shall be abrasively blasted, so as to be free of mill scale. Welding electrodes shall be in accordance with ABS rules.

The Contractor shall develop the detail design necessary to complete the work as specified herein and in the drawings. It is not the intent of the Contract Documents to cover every minor detail of construction and equipment. Details and components that are not mentioned but are necessary to complete the installation to function as intended, or are usual and necessary in accordance with good ship construction practice for this type of vessel, shall be provided by the Contractor to the satisfaction of the Owner.

The Contractor shall provide all certificates, documentation, labor, material, equipment, tools, rigging, and staging, transportation, power, and supplies necessary to complete the work in accordance with the Contract Documents.

11.1 "Or Equal" Substitution Requirements

Names of manufacturers and trade designations of items are mentioned in the Technical Specification only as a means of describing the general function, quality, and construction of the various articles, equipment, or materials. Subject to the approval of alternatives by IDOT, it is not the intention of the Technical Specification to restrict the Contractor to the supply of specific articles, equipment, or materials to the makes or brands so named, but to provide a ready criterion for determining the type, quality, and construction of equipment that will be acceptable. The Contractor will take into every consideration the advantages of using equipment common to the rest of IDOT Ferry fleet , in particular the advantages on maintenance and training.

The substitution of an "or equal" item can only be approved by the IDOT Project Engineer or designated Owner's Representative. Requests for substitutions shall be made in **writing** to the IDOT Project Engineer or designated Owner's Representative, setting forth the reason for the proposed substitution and providing complete documented evidence that it exhibits all of the following:

1. The substitute is substantially similar to the product specified in the Contract Documents in all the elements in the following list, to ensure that no adjustment to the equipment arrangement or operations would be required to accommodate the product's inclusion as a substitute into the Vessel(s)
    - Dimensions
    - Weight
    - Power, HVAC, cooling water and other support services
    - Suitability for marine service
    - Material
    - Noise and vibration characteristics
    - Interface characteristics, and
    - Environmental factors;
2. Its characteristics, performance, reliability, maintainability, availability, vendor furnished training and documentation and other salient features fulfill the requirements of the product identified in the Contract Documents;
3. Its total performance will be such that its use will not adversely affect the intended performance or systems of the Ferry;
4. Its use will cause no increase in required maintenance or cause premature replacement; and

5. It exhibits 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 Ferry.

When substitution of material requires changes to the Contract Design and Guidance drawings the Contractor shall provide revised drawing or separate shop drawing providing the details for the installation.

The approval of an "or equal" by IDOT does not relieve the Contractor of resolving any problems or interferences that result from differences between the specified product and the "or equal" product. Where there is a directed procurement the Contractor shall provide only the specified item. If procurement of this item is impossible because it is no longer available, the Contractor shall request approval of a substitute, in writing, from the IDOT Project Engineer or designated Owner's Representative utilizing the procedure as specified above for "or equal" substitutions.

The Contractor shall, to the maximum extent practicable, standardize by minimizing the number of brands of like or similar components used.

12. Access and Maintenance

The machinery and equipment installed by the Contractor shall be located, supported, and connected so as to permit adequate ventilation, ready and safe access to all parts and components required for operation, inspection, service, and maintenance without disturbance of other structure and/or equipment.

Arrangements for examination, access, cleaning and painting shall be provided for compartments and pockets in the Ferry as shown on structural drawings. Access shall be by means of permanent ladders, walkways, platforms, doors, manholes, and/or bolted plates to allow efficient dismantling of machinery, interferences, and equipment for maintenance and overhaul.

All accesses shall be provided with proper gaskets, cover plates and corrosion resistant closure fasteners.

Exceptions to accessibility requirement are: 1) Kort nozzle head boxes as specified in 2.46 and 2) shaft recesses as shown in detail on drawing 243-102. Following inspection of shell inside and outside, these excepted spaces are to be welded closed without any access openings.

Restriction of access openings by pipes and/or valves is not permitted.

13. Workmanship

The Barge Ferry and Pushboat shall be built in accordance with good shipbuilding practices, to the satisfaction of the Owner (or Owner's Representative).

Cut edges shall be neatly formed and cleaned for welding. All sharp or ragged edges exposed to personnel or equipment contact, or otherwise hazardous, shall be made smooth to avoid injury or damage to equipment.

All finished welds are to be uniform and free from defects such as slag inclusions, porosity, incomplete penetration, and undercutting. Welding sequences shall be planned to minimize distortion and locked-in stress. Unsightly and excessive weld spatter and tack welds shall be removed. All welds on hull and deck exterior shall be ground smooth. All welding shall be in accordance with ABS rules as required by Section I-8. of this specification.

Piping, wiring, and equipment shall be located so as to preserve the appearance of the pilothouse interior and the exterior of the vessel.

14. U.S. Coast Guard Inspection

The Owner will apply for inspection as specified in the Code of Federal Regulations (46CFR176) to issue a Certificate of Inspection (COI) for the new Barge Ferry. The Contractor shall call out, schedule and coordinate Coast Guard inspections, and have all work inspected and approved by the U.S. Coast Guard (USCG) during construction and testing. The Coast Guard Inspector must approve all USCG-inspected work before the Owner (or Owner's Representative) will accept it.

15. Protection of Crew and Installed Equipment

Shafting, couplings, and similar moving items shall have protective guards installed for protection of personnel. Such protective guards shall be removable without dismantling the machinery that is guarded.

The Contractor shall design and provide readily removable guards for all rotating machinery, power-transmission machinery, and other machinery where necessary to prevent personnel from contacting moving parts. Equipment hazards to be guarded shall include, but are not limited to, flywheels, fans, couplings between motors and pumps, chain and sprockets, and V-Belt drives. The Contractor is responsible for ensuring that all machinery is guarded or protected in accordance with:

- OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION - OSHA 1910 – Subpart O – *Machinery and Machine Guarding*
- OSHA Publication 3067 Concepts and Techniques of Machine Safeguarding

Where proper guarding is not provided by the equipment manufacturer, the Contractor shall be responsible for providing proper guarding for all equipment. Guards shall be bolted to the machine bases or foundations utilizing corrosion resistant studs, bolts, washers, and nyloc type nuts.

Operating gear, piping, hoses, and electric cables shall be protected from damage resulting from personnel and vehicular traffic.

16. Watertight Integrity

The entire shell, main deck, and all transverse bulkheads within the hull shall be watertight. Bulkheads above the hull, bounding the Upper Engine Room, shall be watertight up to a level of 4 feet above the deck.

17. Threaded Fasteners

Bolts and machine screws of 3/8 inch diameter or greater shall be used for structural applications unless otherwise noted. Bolt hole diameters shall not exceed bolt diameters by more than 1/16 inch. Flat washers shall be used under each nut.

Fasteners for metal parts shall be galvanically compatible with the parts which they contact. Cadmium plated fasteners shall not be used.

18. Noise

Care shall be taken in the detail design and in the installation to minimize and attenuate the noise created by the hydraulic pumps and motors and the hydraulic transmission path (pipe`, valves, fittings). With the Pushboat running at full propulsion power, with one hydraulic steering pump and other necessary auxiliary equipment and engine room fan running, and with doors, windows and hatches closed, the noise level measured at any location, within the Pilothouse and within the Deckhand Room shall not exceed 80 dbA. The 80 dbA noise limit shall not be exceeded when the Ferry is underway nor when stopped at a landing. Under the same conditions, the noise level measured at any location above the deck of the Barge Ferry shall not exceed 90dbA.

19. Tests and Trials

Throughout the construction and trial period, the Contractor shall assist the USCG inspectors and the Owner (or Owner's Representative) in monitoring and inspecting the work in progress and in testing, by providing safe and well lit access to all parts of the Ferry.

Except where otherwise specified, all tests and trials shall be carried out at the Contractor's expense. The Contractor shall also provide the necessary personnel to conduct the tests and trials.

The Contractor shall compile a **Test Program** for all tests to be done as part of the dockside trials and the underway trials. The proposed program and all test procedures shall be submitted to the USCG and the Owner (or Owner's Representative) at least three weeks prior to the start of testing. The procedure shall be approved by the USCG and the Owner (or Owner's Representative) prior to commencement of testing. The Contractor shall notify the USCG inspector and the Owner (or Owner's Representative) in writing at least one week prior to the time of each test which is to be witnessed by these parties as part of the formal approval process.

After installation and before the underway trials, **Dockside Trials** shall be conducted for all machinery, and for all mechanical, piping and electrical systems as required by Sections II-2, II-3, II-4, II-5 and II-8 of this specification.

It shall be the responsibility of the Contractor to assure that the temporary power supplied to the Pushboat and Barge Ferry's main distribution panel, for testing, is at 240/120 VAC,1-phase, and 60 Hertz.

Builder's Trials, in which the boat is navigated away from the construction facility prior to the formal underway trials, may be conducted by the Contractor.

In the event that the Contractor chooses to conduct informal builder's trials, the Contractor must afford the Owner (or Owner's Representative)s an opportunity to witness the trials and these parties must be given at least one day's advance notice prior to each builder's trial.

After satisfactory completion of all dock trials in the test program, formal **Underway Trials** shall be carried out for the purpose of testing the Pushboat and Barge Ferry as a whole and the performance of individual systems while underway away from the dock. Underway trials shall include testing of all machinery, and all mechanical, piping and electrical systems as required by Sections II-2, II-3, II-4, II-5 and II-8 of this specification.

During the trials and subsequent guarantee period, all machinery shall perform as specified without malfunction, overheating, or excessive vibration. If any mechanical or electrical equipment is found to be defective, it shall be corrected and trials shall be repeated to the satisfaction of the USCG inspector and Owner (or Owner's Representative) to demonstrate that its operation is in compliance with the Ferry performance that is specified.

A **test of the Barge Ferry stability and trim** shall be conducted to the satisfaction of the USCG, at the Owner's expense. Attention is called to 46 CFR 178 subpart C and section 179 pertaining to small ferry vessels. Note that stability calculations and a written report entitled "IDOT New Brussels Ferry Stability Assessment Barge"; a stability calculations and summary report, (2010 Oct 04) has been prepared by the designer, Art Anderson Associates, for review by the USCG. This report is based upon estimated lightship weight and center of gravity for the Barge Ferry. Any verification of these parameters upon completion of the vessel, if required by USCG, shall be done at Contractor's expense.

PART II - TECHNICAL SPECIFICATIONS

Section 1 Structural

1.01 References

[1] Code of Federal Regulations – 46 CFR Sub-chapter T (Barge Ferry)

[2] ABS Rules for Building and Classing Steel Barges – 2009

[3] ABS Rules for Building and Classing Steel Vessels for Service on Rivers and Intracoastal Waterways – 2007, referred to as the "ABS River Rules"

[4] SNAME Publication, Ship Design And Construction (1969 edition)

[5] ASTM F1053-94 Standard Guide for Steel Hull Construction Tolerances

[6] SHIP STRUCTURE COMMITTEE – 331, Ship Structures Committee Design Guide for Ship Structural Details

1.02 Introduction

This section contains the general requirements for the structural hulls, deckhouse, towlink, ramps, integral tanks, hatches, and foundations. Supplemental requirements regarding specific tanks and foundations may be contained in other sections of this specification. Hull structure is designed for service in the protected waters of the Illinois River at Brussels, IL.

The Pushboat shall be constructed to the general arrangement as shown in drawing 801-101 and lines and offsets provided in drawing 839-101.

The Barge Ferry shall be constructed to the general arrangement as shown in drawing 801-201 and lines and offsets provided in drawing 839-201.

Structural general notes are provided in drawings 100-101 (Pushboat) and 100-201 (Barge Ferry).

1.03 General Requirements - Structure

The hull structure of the Pushboat and Barge Ferry is to be of welded steel construction. Steel used for plates and shapes shall be ASTM A-36, with minimum yield strength of 36,000 pounds per square inch (psi) unless otherwise specified in drawings. All steel shall be new.

Steel plates and shapes shall be wheel abraded or sandblasted to near white, SSPC SP-10 of Steel Structures Painting Council (SSPC), and coated with an approved weld through pre-construction primer prior to fabrication. Steel primer shall be compatible with the painting system required by this specification.

All workmanship shall meet the highest standards of quality to ensure requisite structural integrity and strength, fair lines and smooth surfaces, proper fit and alignment, and minimized stress concentrations. Temporary assembly clips and pad eyes shall be removed and the attachment welds ground smooth. Assembly welds shall be neat in appearance with all slag and spatter removed.

Structural details shall be selected with the goal of avoiding fatigue cracking. Care shall be taken to maintain alignment of members to ensure structural continuity.

During deck plating installation, or other structural work, the Contractor shall exercise great care to assure that surfaces are free from "oil can" deflection. Should "oil can" deflection occur in the barge deck, the Contractor shall remove the deflection by heat shrinking or mechanical displacement. Additional stiffening is prohibited. Accuracy of fit-up and fairing of structure will conform to the tolerance limits given in ASTM F1053-94 “Standard Guide for Steel Hull Construction Tolerances” or other appropriate standard for fit-up and fairing of structure as approved by the Owner (or Owner’s Representative). Filling compound shall not be used to compensate for unfairness in the steel structure.

The use of deck and shell doubler plates is prohibited, except where specified. Doubler plates are permitted at shell penetrations for sounding tubes, drains, rudder tubes, and other locations as specified in the Pushboat and Barge Ferry Contract Documents. The use of sole plates is allowed. Penetrations of structural members for piping, ducting, or otherwise shall be kept to an absolute minimum. For penetrations of structural members for piping, wiring, or vent ducts, suitable compensation shall be fitted as necessary to maintain strength. Location of penetrations and openings in structure, and associated stress concentration relief, shall be guided by Chapter V, Section 18, Figure 54(a) and subsections 18.8 and 18.9 of the SNAME publication “Ship Design and Construction” (1969 edition). Through bolts with nuts and washers shall be used in lieu of drilled and tapped holes through structure.

Inlets and discharges in the shell plating are to be fitted with efficient and accessible arrangements for preventing the accidental ingress of water into the vessel.

Limber and vent holes shall be incorporated in non-tight framing and structure to permit free flow to drains and suction pipes. Edges of all openings and cutouts shall be smooth and free of any burrs, gouges, nicks, or sharp edges.

If an opening is cut by hand, the edges shall be ground smooth. No jagged edges shall be allowed.

Pipes used for structure shall conform to the materials specified in ABS River Rules. Structural tubing shall be ASTM A500 Grade B.

Departures from the contract guidance drawings to facilitate the Contractor's normal practice for structural details may be permitted, provided prior approval is received from the Owner (or Owner's Representative).

Those areas not specifically addressed within this specification or drawings shall comply with the requirements of the American Welding Society (AWS) "Guide for Steel Hull Welding", and ABS Rules for Materials and Welding Part 2, ASTM 1455-92(2001) for structural details and Ships Structures Committee 331 "Design Guide for Ship Structural Details".

1.04 General Requirements - Welding

Precaution: After installation of main engines always disconnect diesel engine electronic engine control unit (ECU) connectors and engine control system to vessel ground before welding. High currents or electro-static discharge in electronic components from welding may cause permanent damage. See John Deere Engine Manual OMRG35860 page 50-2.

All welders performing work in or on the Ferry, and in or on components or structures intended for use or installation in or on the Ferry, shall be proficient and certified for the type of work that they are, or may be, assigned to. Although the Ferry will not be ABS Classed, welds, weld procedures, and welder qualifications and certifications shall conform to the requirements of ABS Rules for Materials and Welding Part 2. Choice of welding electrodes shall be approved by the Owner (or Owner's Representative).

Unless otherwise indicated and approved, all joints in plating fields and continuous framing members shall be butt welded. Where framing members cross welded butt joints in plating, the framing members will be neatly scalloped to clear the butt joints. All exterior structural welding shall be continuous. On the Barge Ferry all welding of deck frames and bulkheads to deck shall be continuous. Welding on the shell, decks, and exterior bulkheads is to be performed in a sequence that will produce surfaces that are free of buckles, bulges and other surface irregularities.

Tank boundary connections are to have double continuous welding. IN lieu of double continuous welding tight boundaries of dry spaces may have intermittent welding on one side and continuous welding on the opposite side. Tee-type end connections where fillet welds are used are to have continuous welds on each side. In general the leg sizes of the welds are to be not less than 3/4 times the thickness of the thinner member being attached, but in special cases where heavy members are attached to relatively light plating, the sizes may be modified. Where only the webs of girders, beams and stiffeners are required to be attached to plating, it is recommended that the unattached face plate or flanges be cut back.

The stem of a non-watertight tee connection is to be scalloped in way of the joint of both members forming the tee. Lapped joints are generally to have overlaps of width not less than twice the thinner plate thickness plus l.0 inch. Both edges of an overlap joint are to have fillet welds which, depending on the members to be connected, may be continuous or intermittent.

Overlapped end connections of longitudinal strength members are to have continuous fillet welds on both edges to the thickness of the thinner of the two plates joined. All other overlapped end connections are to have continuous welds on each edge of sizes such that the sum of the two is not less than 1.5 times the thickness of the thinner plate. For channel members not attached to plating, the minimum weld area of the end connections based on the throat dimension of the fillet is not to be less than 75% of the sectional area of the channel.

Plug welds or slot welds may be specially approved for particular applications. Where used in the body of doublers and similar locations, such welds may be spaced about 12 inch between centers in both directions.

The foregoing specifies minimum requirements for electric-arc welding in hull construction. Alternative methods, arrangements and details, such as those in the ABS Steel Vessel Rules, will be considered for approval.

Radiographic inspection of welds or other appropriate inspection techniques shall be performed by the Contractor according to a testing plan to be prepared by the Contractor and approved by the Owner (or Owner's Representative). This plan shall comply with the ABS Rules for Nondestructive Inspection of Hull Welds, and shall identify, on a construction drawing, each location to be inspected. The plan shall be submitted to the Owner (or Owner's Representative) prior to the commencement of any welding. The weld inspection and testing shall be wholly at the Contractor's expense.

Should the radiographic inspection reveal a defective weld, the testing shall be expanded until a sound weld is located. All defective welds shall be removed and renewed to the satisfaction of the Owner (or Owner's Representative). The Contractor shall be wholly responsible for all expenses associated with the removal and replacement of defective welds.

1.10 Shell and Support Framing

The shell and framing of the Pushboat and Barge Ferry is to be as shown in the contract guidance drawings. Most of the shell plating is flat, with some areas of curvature. There is no compound curvature in the plating of the barge shell. The Barge Ferry is to be a single-deck, double-ended cargo barge with raked ends. Deck, shell, and bottom plating between frames shall be supported by longitudinal members.

The Pushboat hull structure incorporates longitudinal girders. The Barge Ferry has a centerline longitudinal truss structure and longitudinal bulkheads.

The bottom plating of the Pushboat is to form a partial propeller tunnel, port and starboard, in the stern section in way of the propellers, as shown in drawing 839-101.

The bottom plating of the Pushboat is to incorporate two propeller shaft stern tubes, two steering rudder tubes, four flanking rudder tubes, two propeller Kort nozzles, and four propeller shaft strut arms. The side shell of the Pushboat is to have a recess on port and starboard sides for engine keel coolers as shown in drawing 117-104.

The side shell of the Pushboat and the Barge Ferry is to have penetrations for overboard discharges as specified in the contract guidance drawings.

1.20 Bulkheads within Hulls

Barge Ferry hull shall be separated into seven voids by six watertight transverse bulkheads. A centerline longitudinal truss is to be installed, as well as non-tight longitudinal bulkheads port and starboard in way of the inboard face of the deep ordinary frames.

The Pushboat hull is to be divided into five compartments by four watertight transverse bulkheads. Deck, shell, and bottom plating between frames is to be supported by transverse framing and by longitudinal girders at three and six feet off centerline, port and starboard. The Fuel Tank Compartment, aft of the Forepeak compartment, is further divided by a transverse bullhead to form two fuel tanks.

Watertight integrity shall be maintained wherever watertight bulkhead penetrations exist for piping and electrical cables by means of proper watertight sleeves or fittings. Bulkheads forming fuel tanks are to be oil tight. Limber holes are to be cut in the non-watertight bulkheads as required to permit satisfactory drainage to the bilge suctions.

The bulkheads within the hulls of the Ferry are to be as shown in the contract guidance drawings.

1.30 Barge Ferry - Deck.

The Barge Ferry deck is to have two inches of sheer and camber, from the knuckles in the deck plating to the shell plating, as shown in drawing 111-201.

Throughout the three vehicle lanes, the deck plate and framing shall have sufficient strength to support axle loads of at least 20,000 pounds. Attachment of the deck beams, longitudinal webs, and bulkheads to the deck shall be double continuous fillet welds.

1.31 Pushboat - Main Deck

The Pushboat main deck is to have no camber and nine inches of sheer at the bow, from the knuckle in the deck plating to the shell plating at the forward end of the Pushboat, as shown in drawing 839-101.

A non-tight raised platform over the steering gear at the aft end of the Pushboat main deck is to incorporate six hatch covers.

1.50 Pushboat Deckhouse

The Pushboat is to have a centerline deckhouse, of weathertight construction, with a Deckhand Room and upper Engine Room at the main deck level. The upper deck is to incorporate two engine removal hatches, engine room exhaust fan cutout, and void space underneath the Pilothouse. The Pilothouse, which is to be accessible by a stairway, is to be six steps above the upper deck level. Deckhouse and Pilothouse structure is to be as shown in drawings 151-101 and 152-101.

1.63 Seawater Intake - Seachest

A three inch diameter seawater intake strainer (seachest) shall be furnished within the Pushboat engine room, from which suction will be taken to the fire main. The seachest shall be formed by a plated-in cavity in the bottom shell plating, near the port side as shown in drawing 529-101.

A seachest shall be furnished at the port side amidships of the Barge Ferry, as shown in drawing 529-201. A length of two inch diameter schedule 80 pipe shall terminate, at 10“ above baseline, in a two inch diameter intake strainer. Suctions will be taken to the firemain/bilge manifold from this strainer.

1.67 Hatches and Manholes

Fourteen 18 inch diameter galvanized quick acting watertight manholes shall be located on the Barge Ferry main deck to provide access to the compartments below, as shown in drawing 111-201. The manhole rims are to be 1/2" proud of the deck plate.

Five steel, flush, watertight manholes shall be located on the Pushboat main deck to provide access to the compartments below, as shown in drawing 131-101. The manholes shall be oval-shaped, with clear opening dimensions 15" x 23" (minimum). The manhole covers shall be galvanized, have neoprene gaskets, and stainless steel machine screw fasteners. A galvanized deck ring at each manhole shall be welded to the underside of the deck plate. Galvanizing damaged by welding or other actions shall be repaired using a galvanizing paint such as Galvacon, or equal.

Two 18 inch diameter galvanized quick acting watertight manholes shall be located on the Pushboat main deck to provide access to the compartments below as, shown in drawing 131-101. The manhole rims are to be 1/2" proud of the deck plate.

Six 48” x 63” rectangular aluminum watertight hatches shall be located on the raised platform on the Pushboat aft deck, as shown in drawing 167-101, to provide access to the steering gear.

Two 42” x 96” rectangular engine removal hatches shall be located on the Pushboat upper deck above the main engines.

1.70 Masts

The Pushboat shall have two tubular, stayed, steel masts, as shown in drawing 422-101. The forward mast shall be mounted atop the Pilothouse, and shall support navigational lights. The aft mast is to be mounted aft of the Pilothouse on the upper deck, also to support navigation lights and a flag halyard attachment.

1.80 Foundations

Suitable foundations shall be provided for mounting all auxiliary machinery, equipment, and electrical gear, in accordance with manufacturer's recommendations. Foundations shall meet the following criteria:

- Have strength and stiffness required to support and maintain alignment of mounted equipment in its operating mode.
- Distribute machinery and equipment loadings to the Ferry’s primary structure.
- Provide additional structural members like headers and chocks as required.
- Provide for alignment and other special requirements of the mounted machinery.
- Provide access to all parts of equipment for inspection and maintenance, and access for maintenance to foundations and adjacent hull structures.

Pockets and inaccessible places, where corrosion cannot be controlled or where dirt and debris can accumulate, shall be avoided.

Foundations exposed to weather using closed box foundations shall be provided with bolted, watertight accesses.

Main propulsion equipment foundations shall be double continuously welded as required by ABS Rules.

Where machinery, such as a pump with motor, is supplied bolted to a substantial steel base, the base may be welded to the foundation, provided the machinery (including future replacements) can be aligned after welding the base and foundation together.

Foundations for machinery containing liquids shall have coamings in order to contain any leakage. Each coamed area shall be provided with at least one valved drain connection.

All equipment exposed to the weather shall make use of closed box foundations. The outside periphery of the box shall be flush with the base outline of the equipment so as to present a smooth, easy-to-maintain structure.

Where high loads or safety make the use of studs impractical, flanges may be added to the closed sections to allow the use of other attachments suitable for the intended service.

Machinery and equipment foundations for the Barge Ferry shall be as shown in drawing 180-201. Foundations for Pushboat main propulsion engines are shown in drawing 117-104.

1.9 Ramp and Ramp Suspension System

Two identical hinged loading ramps, one at each end of the Barge Ferry are to be constructed of a welded steel grating with tack-welded diamond plate, as shown in drawings 584-201 and 584-202. Each ramp is to be hinged at the headlog and suspended by lifting chain and safety chain from a ramp suspension structure.

Each ramp suspension structure shall consist of a port and starboard kingpost. Each kingpost is to be supported by an after brace. The kingpost is to be welded to a deck insert plate and internal headlog framing. The after brace is to be welded to a deck insert plate supported by internal brackets.

Each ramp lifting chain shall incorporate a ratchet turnbuckle for adjustment of ramp slope. In addition to the lifting chains there shall be port and starboard safety chains attached to each ramp.

Each ramp suspension component and associated fitting shall be of sufficient strength so that just one of the pair will be able to support the ramp in the event that the opposite side is removed for repair.

Port and starboard access platforms with guard rails are also to be constructed and installed.

The Contractor shall exercise care to ensure that sufficient clearances are provided for ramp adjustment and for safety barrier operation. Suitable padeyes shall be welded to the ramps to facilitate future removal with a crane.

1.91 Vehicle Safety Barrier and Swing Gates

A pneumatically actuated vehicle safety barrier shall be hinged to each offloading ramp and constructed by the Contractor as shown in drawings 575-201 and 575-202. The barrier shall be raised during transit and lowered for loading/offloading. In the lowered position the safety barrier shall fit flush against the top surface of the ramp.

A center-opening swing gate shall be installed at each offloading ramp and constructed by the Contractor as shown in drawing 575-203.

1.92 Tow Linkage, Latch, Fenders

A pinned tow linkage is to be the primary connection between the Pushboat and Barge Ferry, as shown in drawings 611-201, 611-202, and 611-203. The Pushboat is to have a yoke assembly mounted on centerline at the bow, which mates to an A-frame assembly on the port side of the Barge Ferry, centered at amidships. The A-frame is to be connected to three brackets which are to be welded to shell insert plates on the Barge Ferry.

A pneumatically actuated latch, which is to be mounted on port and starboard sides of the Pushboat, aft of the deckhouse, shall complete the connection by linking to one of two brackets to be mounted on the port side of the Barge Ferry.

Fenders are to be Morse E42002 or equal. Fenders shall be mounted to port and starboard sides of the Pushboat and at two locations on the port side of the Barge Ferry to prevent contact of Pushboat and Barge Ferry side shell plating.

Section 2 - Propulsion Machinery

2.01 General

The propulsion machinery for the Ferry is provided entirely by the Pushboat. All propulsion machinery, support equipment and materials required for installation and testing shall be provided by the Contractor. The Contractor shall obtain technical support services from the major propulsion machinery manufacturer's representative when necessary to support installation, system integration and testing.

The Pushboat propulsion drive train shall include the following equipment:

- Two Marine Propulsion Diesel Engines : John Deere PowerTech 8.1L, 6081AFM75 (Keel Cooled)
- Two Marine Clutched/Reversing Reduction Gears: Twin Disc MG-5091 DC (Deep Case); R.H; 4.5:1 Ratio drawing 1002155, with Hydraulic Clutched SAE C PTO XA7554A
- Two Shaft Couplings: Twin Disc Model XA6988A; Companion Flange Assembly to Reduction Gear
- Two Propeller Shafts with Duramax Marine stuffing box and water lubricated stern tube and strut support bearings. Contract guidance drawing 243-102
- Two MARIN Type 37 Kort Nozzles with KA 4.70 Kaplan Propellers
- Electronic Propulsion Control System – Twin Disc Model EC300 Power Commander.

All propulsion machinery shall be installed in accordance with this specification, equipment manufacturer/provider instructions and the following arrangement and detail drawings:

- 233-101; MACHINERY ARRANGEMENT - PLANS
- 233-102; MACHINERY ARRANGEMENT - SECTIONS AND ELEVATION
- 243-101; PROPELLER SHAFTING AND SUPPORT
- 243-102; PROPELLER SHAFTING AND SUPPORT DETAILS
- 256-101; MACHINERY COOLING SYSTEM PIPING – DIAGRAM
- 256-102; MACHINERY COOLING SYSTEM PIPING – DETAILS
- 259-101; ENGINE EXHAUST PIPING
- 259-102; ENGINE EXHAUST PIPING DETAILS

The installation of the main engines and ancillary systems shall comply with all applicable Original Equipment Manufacturer (OEM) installation and Authoritative Agency requirements as defined in Sections I-2 and I-8 of this specification.

All areas or parts that require service, replacement, or periodic maintenance will be readily available and have free access to do the Work required.

2.01.1 Machine Guarding

The Contractor shall provide guards for the machinery where necessary, to prevent personnel from contacting moving parts or extreme temperatures. Equipment hazards to be guarded shall include, but are not limited to, flywheels, couplings between motors and pumps, "V" belt drives, turbochargers, and exhaust pipes, and power take off shafts. The Contractor is responsible for ensuring that all machinery is guarded or protected in accordance with Occupational Safety & Health Administration - OSHA 1910 – Subpart O – *Machinery and Machine Guarding*, OSHA Publication 3067 *Concepts and Techniques of Machine Safeguarding*.

Where the equipment manufacturer does not provide adequate guarding, the Contractor shall be responsible for providing proper guarding. The propulsion shaft guards shall not obstruct access to shaft seal stuffing box. It is the intent to have clear access to stuffing box maintenance and inspection without the necessity for guard removal.

Provide bolted attachment of the guards to the machine bases or foundations utilizing corrosion resistant studs, bolts, nuts, and washers.

2.01.2 Spare Parts and Instruction Manuals

The Contractor shall provide a list of recommended spare parts and special tools, together with parts lists and instruction manuals necessary to maintain and service equipment and accessories.

2.01.3 Testing, Trials and Inspections

Tests and trials shall be provided in accordance with this section, and section II-8 of this specification.

2.33 Main Propulsion Diesel Engines (Pushboat)

2.33.1 References

[1] John Deere PowerTech 6081AFM75 Marine Engine Operator’s Manual - OMRG35860

2.33.2 General

The Contractor shall provide two John Deere Model 6081AFM75 marine propulsion diesel engines with the following ratings and configuration options:

- Rating: M2 -300HP (224kW) @ 2200 RPM
- Rotation: CCW (facing flywheel, right-hand engines)
- Emissions Certified EPA Tier II or better Emissions Rating; Provided with Emissions label
- Engine Data: 6 Cylinder, 8.1 Liter Total Displacement (494 cu in.), in-Line, 4-cycle
- Keel Cooled
- Aspiration: Turbocharged and after cooled

- Air Cleaners: John Deere P/N RE502014.
- Closed Crankcase Vent feature (CCV): John Deere P/N RE532962.
- Dry exhaust elbow Gaskets (one per engine). John Deere P/N T151881.
- Water-cooled Turbocharger and Exhaust Manifold
- SAE 1 Flywheel Housing; Flywheel No.14 SAE J620d
- Air Starter – TDI T306I turbine inertia air starter or equal, minimum output 6.5 hp at 60 psig air pressure, John Deere mounting flange to engine (specify with engine procurement)
- Alternator 12 Volt, 90 AMP, belt driven
- Engine Block Heater (cold weather coolant heater)- 240Volt A.C.
- Local (Engine Room) and Remote (Pilothouse) Instrument/Start /Diagnostic Monitoring Display Panels PowerView™ or equal.
- Engine foundation mount, John Deere option code 9701 - Front Support Kit RE57814
- Left Hand Auxiliary Gear Drive - John Deere option code 5200 (RE62803) shall be provided for the Port main engine, installed by engine manufacturer. The engine auxiliary gear drive shall have a front facing SAE A two bolt mount with standard 9 tooth 16/32 pitch spline and aft facing SAE B two bolt mount, 13 tooth, 16/32 pitch spline.

The port main engine auxiliary drive will be used to drive the Pushboat belt driven fire/bilge pump which is clutched with a manually actuated clutch. See section II-5.21 of this specification for additional requirements.

The starboard main engine shall be provided with a Midland 1300 CFM air compressor (RE62417/RE67122; John Deere Option 7813 or equal), air compressor governor with plugs kit RE70072/RE505125), and auxiliary drive (Option 5214 or equal). The air compressor will be mounted on the starboard main engine's rear facing SAE B mount to provide a backup air compressor capability. The Contractor shall procure this option so it is factory installed by engine manufacturer or distributor. See section II-5.51 of this specification for additional requirements.

The Contractor shall take responsibility for conducting a torsional vibration analysis and providing a report of the analysis specific to the propulsion drive train of the pushboat. This shall be done to ensure compatibility of components (engine, gear, shafting, propeller). The result of the torsional vibration analysis may lead to a rational selection of torsionally flexible coupling; or it may reveal that there is no need for such a coupling.

2.33.3 Installation

On receipt of marine propulsion diesel engines from the vender, the Contractor shall conduct a thorough inspection with the Owner (or Owner's Representative), to identify and document any visible exterior damage to components. The units shall then be stored indoors and adequately protected from weather, damage, and deterioration in a heated, dry storage facility until such time as the units can be installed on board. Once installed on board, all equipment shall be adequately protected from physical damage and adverse environment.

See section II-2.41.3 of this specification for engine mounting and alignment requirements.
See section II-2.52 of this specification for additional propulsion control system requirements.
See section II-2.56 of this specification for fresh water (jacket water) cooling system requirements.

See section II-2.60 of this specification for Diesel Exhaust Piping system requirements.
See section II-2.61 of this specification for fuel oil system requirements.
See section II-5.51 of this specification for starting air system requirements.
See section II-5.05 of the specification for general piping and material requirements.
See section II-5.08 of the specification for insulation and lagging requirements.

The Contractor shall procure from the engine manufacturer all major components, operators and indicators with attached label plates identifying the component and its function. All internal individual wiring shall have floaters attached, individually identifying the wire. Floaters shall include a reference number to the applicable engine circuit drawing and wire location within the drawing.

Installation shall be in accordance with engine manufacturer's recommendations and requirements stated in this specification.

Provide all piping, valves, fittings, electrical power, wiring, cabling, connection boxes, foundations and other items and devices not furnished with the engine that are required to make the main engine systems complete, functional, operational, and in full compliance with all Authoritative Agency requirements.

Power for the main engine coolant (block) heater (John Deere Option 2602) is 240 VAC, see drawing 321-103 AC Electrical One Line for power source. Engine start, engine electronic control unit components, and instrument panels require 12 VDC power. See drawing 321-102 DC Electrical One line Diagram – Pushboat for power source and section II-2.52 of this specification for controls interface requirements.

All areas or parts that require service, replacement, or periodic maintenance shall be readily accessible to do the work required.

2.41 Main Reduction Gear and Clutch Assembly (Pushboat)

2.41.1 References

[1]: TWIN DISC Bulletin 319-A-91D

[2] TWIN DISC Drawing 1002155 – MG5091(DC)

[3] TWIN DISC Drawing XA7554A - Power Take Off Assembly

[4] TWIN DISC Drawing 1016428C Mounting Bracket Kit

[5] TWIN DISC Marine Transmission Owner's Manual 1016313

2.41.2 General

The Contractor shall provide two Twin Disc Model MG-5091 DC (Deep Case) marine transmissions with the following ratings and configuration options:

- Forward/Neutral/Reverse Reduction
- 4.5:1 Ratio
- SAE 1 Housing
- Type 2 Manual Override Lever
- Electric Shift for FORWARD, NEUTRAL, REVERSE; 12 volt DC compatible with EC 300 Control system. See section II-2.52 of this specification for additional propulsion control system requirements

The STARBOARD propulsion train Twin Disc Reduction Gear shall be configured for Right Hand engine rotation with primary clutch setup for forward (ahead) to drive starboard propulsion shaft for a Right Hand Propeller (turning Clockwise -CW when viewed from astern).

The PORT propulsion train Twin Disc Reduction Gear shall be configured for Right Hand engine rotation with secondary clutch setup for forward (ahead) to drive port propulsion shaft for a Left Hand Propeller (turning Counter Clockwise CCW when viewed from astern).

The Contractor shall order with each Twin Disc Reduction Gear a clutched Power Take Off (PTO) option assembly XA7554A with electric control valve. The hydraulically clutched PTO assembly has an internal drive spline, flat root 14 Teeth 12/24 Pitch, 30 degree pressure angle and SAE C 4 bolt mount. Provide with the PTO an output shaft overhung load adapter (OHLA) which is compatible for the PTO internal SAE C spline and the two Eaton model 70423 Hydraulic Steering Pumps which have a 2-bolt SAE B-B mount and 15 tooth 16/32 DP 30 Degree Involute Flat root Class 1 side fit spline. One source for compatible OHLAs is Zero-Max (1-800-533-1731), Zero-Max drawing L8002ZZ. See section II-5.61 of this specification for steering system requirements.

The following additional components are to be procured by the Contractor with each Twin Disc Reduction Gear. These can be procured through PJ Power, a Twin Disc Distributor:

- Oil Pump and Filter Assembly (Standard - factory installed)
- Oil Pressure and Temperature Gages (local and remote)
- Low Oil Pressure alarm and High oil temperature alarm (audible and visual indication on pilothouse console)
- Reduction Gear Oil Cooler – Power System Specialist Model SB-1202-A6-0, provide one for each gear set.
- Oil level gauge (dipstick) marked with hi and low points for normal range.
- Twin Disk Reduction Gear Output Shaft Companion Flange Model XA6988A for connection to each propeller shaft.

Each reduction gear shall be provided with an output shaft and engine speed sensor for remote display on Pilothouse Console and interface with EC300 control system.

2.41.3 Installation

On receipt of marine propulsion gears from the vender, the Contractor shall conduct a thorough inspection, with the Owner (or Owner's Representative) to identify and document any visible exterior damage to components. The units shall then be stored indoors and adequately protected from weather, damage, and deterioration in a heated, dry storage facility until such time as the units can be installed shipboard. Once installed shipboard, all equipment shall be adequately protected from physical damage and adverse environment.

See section II-2.41.2 of this specification for engine/reduction gear mounting requirements.
See section II-2.52 of this specification for additional propulsion control system requirements.

All areas or parts that require service, replacement, or periodic maintenance will be readily accessible for the work required. The Contractor shall procure from the gear manufacturer or distributor all major components, operators and indicators with attached label plates identifying the component and its function. Installation shall be in accordance with gear and engine manufacturer's recommendations and requirements stated in this Technical Specification.

The Contractor shall provide all necessary support equipment including foundation mounts for the installation and set-up for the Reduction Gears, PTOs & Clutches. Provide all installation, alignment, piping systems, electrical services, set-up, and testing required to produce a complete and operational system, and in full compliance with equipment manufacturer's and Authoritative Agency requirements.

Electrical power for the Main Reduction Gear clutch control, sensors and low oil pressure and high temperature alarms are 12 Volt d.c., see drawing 321-102 DC Electrical One line Diagram-Pushboat for power source and section II-2.52 of this specification for controls interface requirements.

2.41.4 Main Engine and Reduction Gear Mounts, Jacking Bolts, and Alignment
The Contractor shall provide and install main diesel engine and reduction gear mounting brackets in accordance with Pushboat drawings 117-104 and 243-101.

Reduction Gear Mounting Brackets can be obtained from Twin Disc distributor by ordering Mounting Bracket Kit as shown on Twin Disc Drawing 1016428C for SAE 1 Flywheel Housing.

Main Engine Mounting Brackets can be obtained from John Deere distributor by ordering engine Mount option 9701, John Deere Drawing RE57882/RE57814 for Front Support Kit.

Mounting hardware and fastener torque requirements shall be in accordance engine and gear manufacturer's installation instructions. The 6081AFM75 Engine and MG5091DC gear assembly will be mounted to foundation structure using the engine forward mounts and the reduction gear side mount as shown in drawing 243-101.

The main propulsion diesel engines and reduction gears shall be installed on the foundation using poured epoxy Chockfast® Orange for final positioning and alignment following ITW Polymer Technologies Technical Bulletin # 659G.

Engine and Reduction Gear coupling and alignment shall be in accordance with manufacturer's recommendation. The Contractor shall design and provide all necessary jacking bolt and brackets on all foundations as required for use in the controlled alignment of the Main Engine/Reduction Gear to propulsion shaft train. Provide body fitted bolts, chocking materials, and reaming required on the mating surfaces as set forth in the equipment manufacturers' requirements. See section II-2.43 of this specification for additional requirements for alignment with the propeller shaft.

The jacking bolt assemblies shall be fabricated and installed with full weld-out, coated to match the surrounding area, and shall remain installed on the vessel for any future propulsion train alignment adjustments.

2.43 Propulsion Shafting
The Contractor shall furnish, construct and install all propulsion shafting and associated components to include propeller shaft, shaft coupling, stern tube bearing, shaft seal stuffing box, propeller strut bearing and all associated components, support structure, piping and instruments necessary to provide a complete and operational system that meets the requirements of this specification, drawings 243-101 and 102, equipment manufacturer's and Authoritative Agency requirements. Each propeller shaft is to be supported by a shaft bossing and brackets.

Contract guidance drawing 243-102 provides details for propeller shaft material, and construction dimensions and tolerances. The Contractor shall provide for final machining and assembly of the shaft coupling which is to be purchased with the Twin Disc reduction gear assemblies following the manufacturer's recommended procedures and drawing 243-102 requirements.

The Contractor shall perform and document propulsion shafting inspections, measurements, and alignments and report the as-built conditions in writing to the Owner (or Owner's Representative) prior to commencement of dock trials. This report shall include as a minimum:

- shaft sleeve inside and outside diameters,
- shaft coupling seat diameters, key way dimensions, and coupling flange run-out readings
- key, keyway, and taper at the propeller end of the shaft. Inspect the propeller taper fit to the shaft by blue fit method (without drive up).
- Propeller nut inside and tail shaft outside threads, and radiuses; final inspection and dimensions.
- Inspect and measure the stern tube and strut bearing inside (minor) diameters. Measure at both ends and the mid-point of each bearing at the 0-180 degree and 90-270 degree diameters [i.e. two (2) measurements at three (3) locations on two (2) bearings] to establish baseline new construction conditions. Provide final stern tube and strut bearing clearances for both shafts.
- Main engine, reduction gear and shaft alignment readings.

2.43.1 Shafting Alignment

Reference: SNAME Technical &Research Bulletin 3-51

The Contractor shall prepare an Alignment Procedure which includes the shafting, shaft bearings, Main Engine and Reduction Gear using above reference for guidance. The Alignment Procedure shall use the strain gage, hydraulic jack & load cell, or optical technique and shall meet the equipment manufacturer's alignment criteria (John Deere, Twin Disc, and Duramax). It shall include initial equipment alignment pre-launch and final waterborne alignment in its fully outfitted state, with all components installed, connected and supported in their respective bearings. The Alignment Procedure shall be prepared and submitted to the Owner (or Owner's Representative) for approval before alignment is started. A final report of the bearing reaction values shall be submitted to the Owner (or Owner's Representative) for approval.

The shafting system shall be aligned such that the gear fore and aft bearing load differential is within that set by the gear manufacturer (Twin Disc) and all bearing loads are well below the maximums established by the bearing manufacturer (Duramax) for the design bearing life.

The Propulsion System alignment shall be performed under the direct supervision of personnel experienced in and regularly engaged in alignment of vessel shafting using strain gages or other approved methods.

2.45 Propellers

The Contractor shall procure and install two propellers having the following characteristics:

- Four-bladed, Stainless Steel Kaplan style (Ka 4-70).
- 45" diameter ; 40" pitch; with a minimum Expanded Area Ratio (EAR) of 0.62, preferably EAR =0.70.

- Note that Kaplan 4-70 propellers are available from Michigan Wheel Corporation in "CF3" Stainless Steel.
- STBD propeller – Right Hand turning. Port Propeller – Left Hand turning.

2.46 Kort Nozzles

Propellers shall be located inside of Kort nozzles, which shall be welded integrally with the hull, between Frames 26 and 27, as shown in drawing 117-107 and drawing 253-101.

Kort nozzles, by Harrington Marine, shall be fabricated of 3/8" thick mild steel (ASTM A-36 or ABS Grade A). The Kort nozzles shall incorporate a 5/16" thick Type 304 stainless steel "wear band" on the inside. The nozzle geometry shall conform to MARIN Type 37, with an inside diameter of 45-3/4", corresponding to a nominal 3/8" tip clearance to the propeller blades. Tip clearance shall not exceed 1/2".

Each Kort nozzle shall incorporate a rectangular "headbox" of 3/4" plate or 1/2" plate. Top of "headbox" shall be approximately 9" above the top of the annular ring. Overall width (transverse dimension) of "headbox" shall be 36-1/2". Overall length (fore and aft dimension) of "headbox" shall be 22-1/2".

Each fabricated "headbox" is to incorporate a vertical, longitudinal plate, approximately at the nozzle centerline, thus dividing the "headbox" into two boxlike "cells". The lower edge of the interior longitudinal plate is to be welded to the top of the nozzle annulus.

As built into the hull, the forward side of each "headbox" will be flush with the bulkhead at Frame 26 (i.e. butt welded to the bulkhead plating). Each "headbox" will fit through a nominally rectangular hole in the bottom shell. As seen in plan view (drawing 111-101) the rectangular dimensions of the "cut-out" in bottom shell are 22-1/2" x 36-1/2". The "headbox" is to be welded to the bottom shell and internal hull structure. Also a small portion of the "upper lip" of the annular nozzle, where it intersects the bottom shell, is to be welded to the bottom shell.

After each Kort nozzle assembly is aligned and welded into place, the Contractor shall weld a 1/4" top plate onto each headbox (36"x22-1/2") to create two inaccessible, watertight void "cells" within each "headbox".

2.52 Propulsion Controls, Instruments and Alarms

The Contractor shall provide all controls necessary for safe operations and to comply with authoritative agency requirements. Primary controls for Main Engines, Reduction Gear Forward and Reverse clutches, auxiliary equipment, ventilation and engine room equipment remote monitoring instruments and alarms shall be provided at the Pilothouse Control Console. Local instrumentation and controls shall also be provided in the engine room for local monitoring, for maintenance and testing, as well as emergency operations.

Install the main engine control cabinets in close proximity to the main engine gauge box as shown on drawing 233-102. The intent of this location is to provide close observation of the major pieces of equipment located on the main engine accessory rack with gages, and also to observe cylinder conditions as indicated by snifter outputs during the engine starting sequence. Provide necessary interconnecting tubing, root valves, piping and fittings, hangers and supports, wiring, connection boxes and other items and material not furnished by the engine manufacture, required to properly connect installed main engine and reduction gear monitoring devices and sensors to a local main engine gauge box next to each engine and at the Pilothouse control console.

Twin Disc EC300 Power Commander Electronic Controls shall be configured with the necessary options, approved by the Owner (or Owner's Representative), to provide a fully integrated main engine and reduction gear clutch control at the Pilothouse Console. Location of the EC300 components and cable harness lengths must be closely coordinated with the equipment provider at time of purchase. The EC 300 control system can be obtained from a Twin Disc distributor such as Palmer Johnson Power Systems (PJ Power). Alternate control systems can be proposed by the Contractor subject to approval by the Owner (or Owner's Representative).

All control electrical wires shall be shielded and demonstrated to be inherently immune to electro-magnetic interference (EMI) or radio frequency interference (RFI). Control cable wire harnesses shall be between components provided and procedures for proper installation and termination of control cables shall be in accordance with manufacturer's recommendations and installation manual. IDOT Ferry operators use handheld VHF radios during normal operations. The propulsion system electronics, controls and control cables must be shielded from the influences of these devices.

2.56 Jacket Water Cooling (Freshwater)

2.56.1 Main Engine and Generator Jacket Water Cooling

Each Main Engine shall be configured with independent closed-loop high temperature jacket water cooling system. The 6081AFM75 engine is configured with a jacket water pump and thermostat for controlling jacket water circulation and engine temperature. The Contractor shall proved a separate Fernstrum model BN1287B-E1S1 Grid Cooler for each main engine which will be mounted to port and starboard side of engine room following the requirements of drawing 256-101 and 102.

The main engine jacket water cooling system installation shall comply with all engine manufacturer requirements to ensure engine performance is not compromised. The external piping and keel cooler for each jacket water cooling system shall be adequately sized for maximum flow rate of 70 gpm. Pressure drop across the grid cooler is 3.8 psi. Normal jacket water operating temperature is between 160-183^{o} F controlled by engine thermostat.

The Contractor shall provide approximately 12 gallon capacity expansion tank for each main engine jacket water cooling system. Expansion tanks shall be installed at least two feet above the top of the jacket water system high point. Each expansion tank shall be provided with a low level alarm set at 50% with indication on Pilothouse engine room alarm panel.

The main engine jacket water cooling system shall be filled to provide year round protection against corrosion and freeze protection following the engine manufacturer's coolant recommendations.

The Northern Lights Model M30CW Ship Service Diesel Generator engine shall be also be configured with an independent closed-loop high temperature jacket water cooling system. The Jacket Water Cooling Systems shall utilize Fernstrum®; Model BN675B-E1S1 grid cooler mounted on port side of Pushboat in accordance with drawing 256-101,102 to reject the heat to the river. All requirements in this section and section II-2.56.2 of this specification shall also apply to the generator jacket water system installation. The expansion tank for the diesel generator (Northern Lights Model 10-11205) shall be procured with the generator and installed as shown on drawing 233-101 and manufacturer's recommendations.

2.56.2 Grid Cooler and Piping Installation

Installations shall include all structure, coolers, attachments, anodes, and fittings to produce a complete and operational grid cooler system that meets the cooling requirements of that equipment serviced by the cooler under all operational conditions, whether underway, or dock side.

All Jacket Water Cooling piping shall be installed and welded following the requirements of ABS River Rules Part 2 Materials and Welding and Part 4 / Chapter 3 Pumps and Piping Systems.

Construction of the hull recesses, inlet and outlet cofferdams, the two main engine (Fernstrum BN12878-E1S1), and one diesel generator grid cooler (Fernstrum BN675B-E1S1) shall be in accordance with drawing 256-102 and Fernstrum installation recommendations. Grid coolers are to be protected with McNichols GW 75 (3/4"X3/16") grating which is to be removable for maintenance as shown on drawings 256-102.

Electrically isolate grid coolers from hull at all attachment points and at each nozzle. Do not paint the Grid Coolers.

All jacket water cooling piping inboard of the inlet and outlet cofferdams shall be Schedule 40 seamless galvanized carbon steel piping ASTM A-106 Grade B or A53 Grade B. The requirements of section II-5.05 of this specification also apply. The Contractor is to route the fresh water cooling piping to the vicinity of the engine cooling water inlet and outlet to minimize connection hose lengths. Fittings shall be carbon steel, butt welded 150#, schedule 40 ASTM A234, ANSI B16.9.

Flexible connections shall be provided between engine coolant connections and the 2-1/2" Jacket water piping using 2-1/2 " hose that is USCG approved in accordance with 46 CFR subchapter F 56.60 SAE J-1942 and SAE J-1475 and attached with double hose clamps.

The system shall be cleaned, flushed, filled and tested in accordance with 46CFR subpart 56.97 (Class II piping). Pipe hangers shall meet the requirements of ASTM F708. The Contractor shall adjust the design, spacing and installation of pipe hangers as necessary. Takedown joints shall be welded, slip-on carbon steel, 150lb, ASTM 105, ANSI B16.5.

Provide grid cooler inlet and outlet temperature gages located near engine connections. For Main engine grid cooler outlet temperature reading locate at cooling water inlet to the reduction gear lube oil coolers and provide additional temperature gage for lube oil cooler freshwater outlet located near engine inlet.

All gage lines piping assemblies shall be in accordance with ASTM F721-81 requirements. Tubing and fittings are to be made from 316 stainless steel.

All valves not accessible from the floor plates shall be provided with reach rods and visual closure status.

Piping shall be run as directly as practical with a minimum number of bends and fittings and with sufficient joints to provide for removal, inspection, and servicing of valves and equipment. Use long-radius elbows, three-radius elbows, and large radius bends, instead of short-radius elbows.

The Contractor shall install expansion tanks for each system and verify final size based on final installation total system volume (piping, grid coolers and engine) following engine manufacturers recommendations. Expansion tanks shall be mounted so that bottom of tank is above highest point in the system. Vent lines to the expansion tank shall be provided at all piping system high points to allow complete air removal. Insulate Jacket Water piping as needed for personnel protection in accordance with ASTM F683 using removable blanket type insulation.

2.60 Engine Exhaust

The Contractor shall fabricate and install complete exhaust systems for both main engines and the diesel generator as specified in this section, section II-5.05 of this specification, and drawing 259-101. Each main engine and the diesel generator shall exhaust through a separate pipe within the Engine Room and routed aft through the Aft Void and Aft Peak Tank. Bulkhead penetrations shall be in accordance with drawing 259-102.

The engine manufacturers' backpressure limits shall not be exceeded in any installation.

Multi-Ply stainless steel flexible connections (expansion joints) shall be installed near each engine exhaust outlet to allow for vibration, thermal and mount deflections. Additional flexible connections shall be installed as required to accommodate deflection and thermal growth throughout the systems. Flexible connections shall be the DME series 655 type or equal as indicated on drawing 259-101. For main engines, expansion joints shall also be installed at the muffler outlets as shown on drawing 259-101.

Hangers, anchors and guides shall allow for thermal growth in the exhaust piping and shall isolate heat, noise, and vibration from the Pushboat's structure.

Materials and installation shall be in accordance with section II-5.05 of this specification.

Ensure that all exhaust runs are sloped so that no concentrated volume of liquid can accumulate.

Provide easy access for all maintenance, removal, and replacement of expansion joints, and gaskets without the necessity of hot work.

The Contractor shall provide complete exhaust systems including exhaust silencer (muffler), flanged exhaust pipe adapters, pipe, fittings, expansion joints, isolation mounts, flanges, gaskets, hangers, foundations, and other items and devices as are required to make complete, functional, and fully operational exhaust systems.

The Contractor shall provide low-point drains installed for the silencers to drain any oil or water accumulations. The drain pipes shall be capped and allow for a 1 gallon bucket to be placed under the open end.

The diesel engine exhaust systems and design shall satisfy all the requirements of the diesel engine manufacturer as to pipe size, bends and other restrictions, such as turbocharger exhaust flange loading, in order to ensure that diesel engine performance and life cycle is not compromised.

The exhaust piping shall be supported as to safely withstand stresses induced by weight, thermal expansion, and vessel motion with hangers fabricated in accordance with ASTM F708.

2.60.1 Insulation and Lagging

Provide insulation and lagging for exhaust piping within the engine room in accordance with this section and section II-5.08 of this specification. Where the insulation is subject to damage, the lagging shall be protected by a sheet metal covering. Removable pads shall be provided over flanges, flexible joints, and connections. The exhaust piping systems shall include guards located where high operating surface temperature may create a hazard to personnel.

2.61 Diesel Fuel System

2.61.1 General

The Contractor shall install a diesel fuel system as shown on drawing 541-101 for storage and fuel supply to main engines and diesel generator for ASTM D975, Grade Low /Ultra Low Sulfur No. 2-D diesel oil. All materials including gaskets, o-rings, seals, etc. shall also be compatible for use with bio-diesel fuels (B20 to B100).

Due regard shall be given to the changes in temperature that the oil may experience through heat transfer from engine parts (i.e., clean fuel return from injection system), ambient conditions, and other causes when routing piping.

Drip pans shall be permanently installed beneath such items as strainers and filters.

See section II-5.05 of this specification for general piping and material requirements and section II-5.08 of this specification for spray shield requirements.

The Contractor shall follow this specification and engine manufacturer's recommendations for fuel line connectors and filtering requirements.

2.61.2 Diesel Fuel Tanks

The Pushboat will have two fuel tanks that provide for both storage and fuel oil service to the main engines and diesel generator. The aggregate volume of the two fuel tanks is approximately 4,390 gallons. At 95% full, the fuel capacity is approximately 4,170 gallons.

A fuel tank overflow pipe is to be installed so that the two tanks overflow into each other. A spill containment box is to be provided on the portside of the Deckhand Room which contains the tank fill pipes and tank vents as shown on drawings 541-101 and 541-102. Both The fwd and aft diesel fuel tanks are to be provided with a drainage sump fabricated in accordance with drawing 541-102.

Each fuel tank is to be provided with a Headhunter Model TS-3002B or equal tank level indicator. A fuel panel shall be provided in the Pilothouse console to display the fuel tank levels. See drawings 401-101 and 621-101.

A vertical fill pipe shall also be provided with a graduated dipstick for the purpose of sounding the tank contents.

2.61.3 Fuel System Piping

The diesel fuel system shall consist of the supply/return piping serving the two (2) main engines and the diesel generator. Fuel system suction and return valves shall be grouped and located for convenient access and operation.

The fuel fill pipes shall be provided with hinged style, lockable fill caps, Morrison Brothers Co. Fig.179, or equal.

Each fuel tank vent pipe shall be provided with a 180^{o} gooseneck terminal, fitted with a 30 x 30 mesh, corrosion resistant flame screen, having net flow area of at least 5 square inches.

Full-port ball valves, sized to the full diameter of the service supply and return lines piping, shall be provided as shown on drawing 541-101. A flexible cable remote operator shall be provided for the three tank suction valves so they can be controlled topside on main deck in the Deckhand Room as shown on drawing 541-101. Remote operators shall be flexible cable type such as Elliott Manufacturing or Teleflex type.

See section II-5.05 of this specification for material and additional piping and valve installation requirements.

Fuel oil supply and return valves shall be readily accessible at each engine.

Diesel oil service return piping to the fuel tanks shall terminate within the tanks in a manner that minimizes fuel aeration.

The supply piping serving each main engine and the diesel generator shall be provided with dedicated full flow, 30 micron, coalescing duplex filter assemblies RACOR Model 75/900 MAXM (metal bowl) or equal in addition to the engine-mounted filter. Each filter assembly shall be provided with a stainless steel drip pan and differential pressure gage.

2.61.4 Cleaning and Flushing

Thoroughly clean all fuel oil system piping material, including fittings, after fabrication or assembly, and before installation, by pickling in hot acid. Thoroughly rinse after the acid bath, acid neutralize, rinse again, dry and immediately coat with a preservative oil. Cover all open ends with bolt on caps or screw in/on plugs until the piping material is installed.

After installation has been completed, bypass the pumps and piping components that might be damaged or plugged by debris in each individual fuel oil system.

Thoroughly clean and flush the piping systems by continuously circulating diesel fuel at a velocity of at least twenty-five (25) feet per sec through a temporary five (5) micron strainer and filter system, fitted with muslin bags and magnets, until filters remain clean for two (2) consecutive two-hour runs at full flow operation. As an alternative, the Contractor may use a duplex strainer fitted with muslin bags and magnets. Cleanliness criteria shall be no appreciable contamination for period of two (2) hours, until filters remain clean for two (2) consecutive two-hour runs at full flow operation. Flushing shall be accomplished utilizing pumping devices that do not form a part of any piping system permanently installed in the Vessel.

Pneumatic, electric motor driven, of the temporary in-line and/or portable hand types or other manual means for line vibration, shall be continuously employed during the cleaning process. The vibrators shall be firmly affixed to the piping throughout the cleaning cycle.

When a satisfactory level of cleanliness has been attained, remove the flushing oil from the system paying particular attention to draining low points. Dispose of the used flushing oil and contaminated filters in accordance with current rules, regulations, and laws of cognizant agencies.

Remove all temporary filters and replace all permanent filter elements with new elements of the appropriate type. Provide a tag on each filter housing which indicates the date the filter was installed and by whom.

Open and manually clean affected tanks with lint-free rags or other suitable wiping material to remove all traces of residual contamination and oil. Final inspection of fuel tanks and closure of accesses is to be witnessed by the Owner (or Owner's Representative). Close the tanks utilizing new gaskets and corrosion resistant nuts and studs/bolts.

2.62 Propulsion Lube Oil Systems

2.62.1 Main Engine Lubricating Oil

Main engine lubricating oil shall be in accordance with the engine manufacturer's requirements and match the brand/type utilized by IDOT for other pushboats when compatible with equipment manufacturer's specifications.

The Contractor shall provide an oil drain valve with hand wheel locking device, piping and cap necessary to provide an accessible method for routine oil change maintenance for both main engines. Materials and installation for shall comply with section II-5.05 of this specification.

2.62.2 Main Reduction Gear Lube Oil and Cooling System

Main reduction gear oil shall be as required by the gear manufacturer and the brand/type utilized by IDOT for other pushboats when compatible with equipment manufacturer's specifications. Each reduction gear is to be provided with attached lube oil pump with all accessories mounted on the gearbox except for the Oil Cooler. The oil cooler is to be installed in series and at the jacket water outlet (cold side) of each main engine keel cooler as shown in drawing 256-101.

Each Twin Disc reduction gear shall be provided with an inline lube oil cooler that is cooled by the jacket water returning from the respective main engine Fernstrom grid cooler, as shown on drawing 256-101. These heat exchanger kits, available through PJ Power systems (a Twin Disc distributer), are sized for the MG-5091DC gear set. Lube oil heat exchanger requirements for temperature control and oil flow are available on Twin Disc drawing 1002155 sheet three. Oil cooler requirements are summarized below:

- Maximum jacket water inlet temperature = 162oF
- Maximum, Oil Temperature into the lube oil cooler inlet temperature = 185 oF.
- Maximum Oil outlet temperature = 167.4oF.
- Oil line, piping maximum fluid velocity = 25 ft/sec
- Maximum allowable oil pressure drop across heat exchanger is 30 psi @ rated engine rpm.
- Flexible hose connections shall be USCG approved 46 CFR 56.60 SAE J-1942 and SAE J-1475.

General piping requirements of section II-5.05 of this specification shall apply to lube oil tie-ins to reduction gear oil system, and oil coolers. Refer to section II-2.56.2 of this specification for jacket water cooling piping requirements. Each of the oil cooler heat exchangers are sized for full flow of jacket water and shall be equipped with full-flow isolation ball valves on the lube oil cooler jacket water inlet and outlet. These valves are normally open and can be closed when engine is shutdown for Lube Oil Cooler maintenance. There shall be inlet and outlet thermometers mounted on the jacket water side of each of the oil cooler heat exchangers. Vent lines with isolation valves shall be provided at the high points on outlet side of each cooler.

The reduction gear lube oil systems shall be provided with local and remote reading oil pressure gages, low oil pressure audible/visual alarm located at the Pilothouse control console and set in accordance with Twin Disc OEM recommendation for minimum oil pressure, and local /remote oil temperature indication with high temperature alarm set at 185° F on the pilothouse console. Follow Twin Disc manufacturer requirements and drawing 1002155 for connection and location of pressure and temperature gages and oil piping system connections to the lube oil cooler.

The Contractor shall provide oil drain valves with hand wheel locking device, nipple and cap that is accessible for routine oil change maintenance for both main reduction gear oil sumps. Materials and installation shall comply with section II-5.05 of this specification.

2.62.3 Lube Oil Storage Tank

Pushboat shall incorporate a non-integral, steel lube oil storage tank, of approximately 66 gallons capacity. Tank, together with fill, vent, and supply piping connections, is shown in drawing 543-101. Tank is intended to be filled from 55-gallon drums landed on the upper deck. Lube oil is manually pumped from drum into the lube oil storage tank via fill pipe rising above the upper deck. The lube oil tank fill connection shall be provided with a threaded cap as shown in drawing 543-101. Provide a 10" diameter spill coaming, continuously welded to upper deck, around the fill pipe, as shown in drawing 543-101. Lube oil is dispensed from the tank via a self-closing drum faucet (McMaster-Carr P/N 40055T18, or equal). Faucet shall have threaded outlet to enable attachment of a hose. Liquid level gauge shall be a sight glass, approximately 24" in length, as shown in drawing 543-101 incorporating two needle valves. Sight glass shall be Lube Devices, Inc. Model G608-24-A-1-4 (Grainger Stock No. 1U947), or equal.

All joints in tank plating shall be continuously welded, except for lower seam of lap joint at tank top, which shall not be welded. Interior of tank shall be thoroughly cleaned prior to welding up tank top. Interior shall be unpainted. Tank shall be attached to supporting angle structure in upper engine room as shown in drawing 543-101, using (minimum) six 1/2" nominal diameter hex bolts. Bolts shall be ASTM A325 Type 1 or stronger), with ASTM A194 (or stronger) nuts, and matching washers.

The Contractor shall provide a minimum of 20 ft lube oil hose suitable for gravity fill to support main engine oil change maintenance. Provide a mounting bracket at location suitable for lube oil fill hose stowage.

2.62.4 Provision for Waste Lube Oil Removal

For removal of waste lube oil from the engines, provide either (one) manual hand pump (such as West Marine Mod 3704575, or West Marine Mod 5842455) or (one) drill pump (such as Jabsco #17215-0000). Suitable piping shall be installed downstream of the drain valve on the each main engine oil sump, to allow for suction to be taken by the specific pump that is furnished for waste lube oil removal.

Section 3 - Electric Plant

3.00 General Requirements

The main power distribution system is single phase, 120/240 volts AC, 60 Hz and is fed from either the Pushboat's diesel-generator set or from shore power through a transfer switch. The transfer switch allows connection to either power source (but not both simultaneously) and also provides an "off" position. When connected to diesel-generator power, the neutral is grounded at the generator and when on shore power the neutral is grounded via the shore power system. Two sub distribution panels, one in the Pilothouse and one in the Engine Room distribute power to the Pushboat's equipment.

The A.C. electrical general notes and distribution system are shown schematically in drawings 321-101 and 321-103.

A 12 VDC system provides essential electrical power for diesel-generator starting, emergency lighting, navigation aids, alarms, and control and communication systems. The 12 VDC distribution system is powered by the battery charger, the ships service battery, and one of the two main engine alternators. Three 12 VDC power panels are provided: Engine Room, Pilothouse, and Navigation Light Panel, as shown in drawing 321-102.

See machinery arrangement and Pilothouse arrangement drawings 233-101 and 621-102 for AC and DC switchboard and distribution panel locations.

Electrical fixtures which are not connected by a metallic chassis, framework, or enclosure to the ship's steel structure, shall be bonded to the ship's steel structure as required by 46 CFR 111.05.3. The 120/240 VAC system neutral shall be grounded at one point only and provided with ground current detection current transformer and indication as shown in drawing 321-103. All conductive electrical enclosures shall be electrically bonded to the ship’s steel structure at the nearest convenient location.

All electrical equipment shall be of a type which is suitable for marine duty and, in general, shall be constructed in accordance with UL standards. All lighting fixtures in the 120 VAC system shall be constructed in accordance with UL Standard No. 1598A, or have "marine type" labels. Equipment that requires external wiring shall be provided with solderless connectors (wire lugs) for the connection to wiring circuits.

All electrical equipment shall be located, constructed, or positioned to afford protection from damage caused by leaking oil or water. As a minimum, drip-proof protection shall be provided for all equipment. Equipment, such as distribution panels shall be provided with drip-proof protection by drip shields or by being enclosed within a locker.

All electrical cables shall be tagged and the circuit designations shall correspond to drawings 321-103, 321-102, 401-101, and 556-101, as revised (if the contract guidance plans are deviated from) to show the as-built circuitry.

Note that electrical features which are specific to the electro-hydraulic, electric-pneumatic, and other control systems are also addressed in the specific system sections of this specification.

3.01 Placards and Nameplates

3.01.1 Posted Operating Instructions

Provide for each system and principal item of equipment as specified in the technical sections for use by operation and maintenance personnel. The operating instructions shall include the following:

- Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
- Start up, proper adjustment, operating, lubrication, and shutdown procedures.
- Safety precautions.
- The procedure in the event of equipment failure.
- Other items of instruction as recommended by the manufacturer of each system or item of equipment.

Print or engrave operating instructions and frame under glass or in approved laminated plastic. Post **instructions where directed. For operating instructions exposed to the weather, provide weather-resistant** materials or weatherproof enclosures. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

3.01.2 Manufacturer's Nameplate

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

3.01.3 Field Fabricated Nameplates

Comply with ASTM D 709. Provide laminated plastic nameplates for each equipment enclosure, relay, switch, and device; as specified in the technical sections or as indicated on the drawings. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125 inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be one by 2.5 inches. Lettering shall be a minimum 0.25 inch high normal block style.

3.02 Motors and Controllers

All A.C. motors shall be built to NEMA standard frame sizes and mountings. Motors shall be rated for continuous duty. Motors and controllers shall be selected with characteristics which will match the requirements of the driven equipment. Controllers shall provide for motor protection, starting, and stopping.

Motors shall be equipped with factory-sealed pre-lubricated ball bearings or else greasable ball bearings which are accessible for in-service greasing during manufacturers' recommended overhaul periods. All metal parts shall be made of corrosion- resisting materials or shall be treated to render them corrosion-resistant.

Motors larger than one horsepower shall be furnished with a special marine treatment of the windings, to make the windings resistant to dampness, oil fumes, and fungus. They shall also be furnished with integral space heaters, to prevent the formation of condensation during periods when the ferry is not running its generator. Heaters shall be electrically interlocked in such a way that they are disconnected whenever the motor is energized.

In lieu of providing space heaters, provide motors with insulation and construction in accordance with IEEE Std 45, Paragraph 13.5

Motor controllers shall be marked with the following information: name of equipment controlled, branch circuit identification, voltage/phase. A wiring diagram shall be mounted inside the cover. The control transformers shall provide power for anti-condensation heaters in the controllers and anti-condensation heaters in the motors. Auxiliary contacts shall be incorporated into the motor controllers in such a way that the anti-condensation heaters shall be automatically shut down when the motors are operating.

Remote push-buttons and master switches shall be labeled with the name of the equipment controlled and any needed operating instructions.

3.10 Ship Service Diesel Generator

3.10.1 General

The Contractor shall obtain the services of the diesel generator manufacturer's technical representative to oversee installation, initial startup, dock trials, and underway sea trials; and to provide instruction to the ship's crew regarding maintenance and operation of the diesel generator.

In addition to this section, section II-5.05 of this specification shall apply for all piping and flexible connections.

3.10.2 Installation

The Contractor shall provide and install a diesel generator with the following salient characteristics:

- Northern Lights Model M30CW3.4 or equal: 30KW full load continuous rated capacity with 110% overload capacity, 1800 RPM, 120/240 Volts, 60Hz 1 Phase, 1.0 PF
- Close coupled generator to engine, single bearing, brushless
- Keel Cooled with expansion tank
- 12 volt electric system with starter and battery charging alternator
- ± 1.5% voltage regulation
- Standard DC Ground to engine block
- Commercial duty, fuel injected, turbocharged marine diesel engine
- Certified Tier 3 40CFR Emission compliant
- Electric block heater (vice separate jacket water keep warm heater)
- Provide a duplex type fuel filters, Racor-Parker or equivalent. Install in accordance with drawing 541-101. Selector valve that allows isolation of one filter for repair and maintenance while the other remains in service. Filter is to provide stipulated flowrate within permissible maximum pressure drop as required by engine manufacturer. Provide pressure gages showing pressure drop across fuel filter elements and fuel system pressure.
- Diesel generator shall be provided with a standard dry type exhaust elbow and replaceable air cleaner. Diesel exhaust shall be installed in accordance with engine manufacturer's recommendations and section II-2.60 of this specification.

Install new diesel generator assembled and resiliently mounted on a skid as one-piece unit, welded steel base frame with a drip pan. The Contractor shall design and install a steel foundation to adequately support the diesel generator at the location shown on drawings 233-101 and 233-102. Install the diesel generator following the manufacturer's installation manual and any additional manufacturer's recommendations.

Provide the following options and accessories for the Diesel Generator:

- Welded steel base "skid" frame with center bonded isolation mounts
- Control panels with AC and DC gages with remote display for Pilothouse Console, including alarms and shutdowns for low coolant level, high temperature, overspeed, and low oil pressure.
- Lube oil drain valve with pipe, cap and keeper routed to accessible location for oil change maintenance.

Fabricate and install an engine oil drip tray from sheet metal not less than 12 gage stainless steel or hot dipped galvanized, if not provided by the manufacturer. Fit-up to suit installation and accessibility. Attach to support structure using CRES fasteners and brackets to allow for easy removal during maintenance.

Install flexible hoses suitable for system and fluid service that meet the requirements of 46 CFR 56.60 - Materials, for connections between the new diesel generator and ship's piping systems.

Under the guidance and instruction of the manufacturer's technical representative install all required electrical connections to the diesel generator necessary to make it fully operational. Electrical installation shall be in accordance with drawings 321-101, 321-102, and 321-103, engine manufacturer's installation manual, and engine manufacturer's recommendations. Comply with the requirements of 46 CFR Subchapter T and ABS River Rules.

The generator shall be per IEEE 45, Clause 7, Section 7.4 as applicable to self contained generators. Provide overload and short circuit protection per section 7.5. Provide metering per 7.5.10.

3.10.3 Tests/Reports/Documentation
Piping systems installation shall be tested in accordance with 46 CFR 56.97 – Pressure Tests and engineer manufacturer's recommendations.

Diesel generator startup and test shall be conducted under the guidance of the manufacturer's technical representative. Perform pre-startup adjustments, checks, and inspections. Operate ship's equipment and perform dockside tests and underway sea trials of the diesel generator with all functions and at full load capacity.

Provide documentation of all tests and trials to IDOT representative's for acceptance. If any test or trial results are unsatisfactory, corrections shall be made and tests and trials shall be performed until results are proven satisfactory to IDOT's representative.

Provide two (2 each) sets of technical manuals for new diesel generator to the Owner (or Owner's Representative).

Provide technical instruction by the manufacturer's technical representative to the crew for maintenance and operation.

3.13 Battery and Battery Charger
3.13.1 Battery
Two identical 12V batteries shall be provided as shown in drawing 321-102 One battery is dedicated to starting the diesel-generator set. The other battery serves the ship service loads.

The batteries shall be in accordance with CFR 46 Part T. The batteries shall be lead-acid. The batteries shall have the minimum capacity specified on drawing 321-101.

Each battery shall be mounted inside of an acid resistant battery box. Each battery box shall have a watertight lining to a height of three inches above the bottom. Each battery box shall be strapped or bolted in place to the steel structure. The box shall allow adequate natural ventilation of the battery.

Valve-regulated lead-acid batteries are not acceptable.

3.13.2 Battery Charger

A current-limiting battery charger, conforming to UL 1236, with at least two outputs, shall be provided and shall automatically recharge the batteries and service the steady state DC load. The charger shall be capable of an equalize charging rate for recharging fully depleted batteries within 24 hours and a float charge rate for maintaining the batteries in prime starting condition. An ammeter shall be provided to indicate charging rate. A timer shall be provided for the equalize charging rate setting. A battery is considered to be fully depleted when the output voltage falls to a value which will not operate the engine generator set and its components.

3.21 Electric Cables

All new cable shall be supplied and installed by the Contractor. When specifying cable types for installation, the Contractor shall use MIL-DTL-24643B unarmored low-smoke cable. When the required cable is not available the Contractor shall substitute IEEE Standard 45 cable acceptable to the USCG.

The bend radius of cables shall not be smaller than the manufacturer's stipulated minimum. In no case shall the bend radius be smaller than six times the outer diameter of the cable.

In so far as practicable, cable shall be run on the interior of hull, deckhouses, and masts, with penetration to exterior fixtures in close proximity to the fixture served. Cables shall not be run behind acoustical insulation linings in the machinery enclosure. Cable runs inside the pilothouse shall be concealed to the maximum extent practicable.

Cable penetrations of watertight bulkheads and deck shall be run through bulkhead-type stuffing tubes (nylon or brass body) or multi-cable transits. For penetrations of the deck in exposed locations, stuffing boxes shall incorporate a kick pipe and multi-cable transits shall be mounted in a riser box. Cable penetrations through weathertight boundaries shall be run through terminal-type stuffing tubes (nylon or brass body) or multi-cable transits.

Where cables pass through non-watertight bulkheads or framing of less than 3/16" thickness, the cable shall be protected by a suitable bushing at the point of penetration.

Cables shall be adequately supported throughout their length. In general, cable supports shall be spaced no further than 24 inches apart. Cable support shall be in accordance with IEEE Standard No. 45, Section 25.5.

3.24 Panelboards and Load Centers

Per NEMA PB1 and NEMA AB1.

Circuit breakers shall be thermal magnetic, bolt-on type. Bussing shall be copper.

Provide a printed circuit schedule with each panelboard and load center

The 12 VDC power shall be derived from a battery charger and distributed, via the battery and Panel "#3", to various engine room accessory loads, as shown on drawing 321-102. Circuit breaker panel shall have NEMA Type 1 enclosure. The Pilothouse DC distribution Panel #4 shall be provided with a DC ammeter and volt meter. Circuit breakers shall be DC rated for the voltage and amperage of the system in which installed.

3.32 Light Fixtures

The Contractor shall provide navigation lighting to exterior as shown on drawing 422-101 for the Pushboat and drawing 422-201 for the Barge Ferry.

All 120 VAC light fixtures are listed, by make and model number, on drawing 321-101. All exterior light fixtures shall be weathertight.

All 12 VDC light fixtures shall be provided, complete with bulbs, corresponding to the lighting branch circuits shown on drawing 321-102.

All light fixtures shall be furnished complete with bulbs. Ballasts shall be provided for fluorescent fixtures.

Note: See section II-4.22 of this specification for navigation lights and searchlight fixtures.

Section 4 - Instrumentation and Control Features

4.21 Clock and Bell

A self contained, battery-powered clock shall be mounted in the pilothouse.

A bell in compliance with 33 CFR 86.21 shall be incorporated. Bell shall be portable. A fixed mounting bracket for the bell shall be located under the pilothouse roof overhang on the starboard side, in such a way that the operator can strike the bell from within the pilothouse by reaching through the opening side windows.

4.22 Electrical Navigation Aids

4.22.1 Navigation Lights

USCG-approved and conforming to USCG Navigation Rules - Inland (COMDTINST M16672.2A) shall be mounted on the Pushboat and Barge Ferry as shown in drawings 422-101 and 422-201. Given the bi-directional nature of this double-ended ferry, navigation lights on the Barge Ferry shall be arranged and switched accordingly, with two pairs of side lights, two masthead lights, and two stern lights, as shown in drawing 422-201. A two-position toggle switch, as shown schematically in drawing 321-102 shall produce the proper display of barge navigation lights for the bi-directional function. The selector switch shall be located on the Pilothouse control console, conveniently within reach of operator.

The navigation lights shall have two miles visibility (minimum), except masthead lights which shall have 5 miles visibility. Navigation lights shall be Perko, or equal, complete with light bulbs for the specified voltages. Running lights (12 VDC) are specified individually in drawings 422-201 and 422-101 by Perko part numbers. Running lights shall be provided with shields to produce the proper sector of visibility as dictated by the navigation rules.

4.22.2 Search Lights

Two search lights shall be provided on top of Pilothouse as shown on drawing 621-102. See drawing 321-101 for details of the search lights.

4.33 Loudhailer Intercom

The combined functions of loud hailer, intercom, and fog signal shall be provided by a single loud hailer, Raytheon Model "Ray 430" or equal. Loudhailer and microphone shall be mounted in the overhead of pilothouse, as shown in drawing 621-102. Speakers shall be mounted in accordance with drawing 401-101.

4.36 Alarms

Alarms for the propulsion machinery are also addressed in equipment section II-2.52 of this specification. Alarm circuits for fire detection, bilge level, air system, Engine Room machinery and steering hydraulic system shall be provided in accordance with drawing 401-101.

The following alarms shall be included, as a minimum:

- High bilge water level in the Pushboat Engine Room, Aft Void, Forepeak, Tank Compartment, and After Peak: locate detectors in engine room as shown in drawing 233-101, and elsewhere near each bilge suction, to actuate alarm when water level reaches approximately two inches above bottom shell (four inches maximum). Alarms are to be displayed at the Pilothouse Console. See drawing 529-101 for Pushboat bilge suction locations.
- Low hydraulic fluid level in steering system hydraulic reservoir: locate detector in reservoir to actuate alarm whenever volume of hydraulic fluid is 35 gallons or less, see drawing 556-101.
- High fluid temperature in steering system hydraulic reservoir: set to actuate alarm when hydraulic fluid temperature exceeds 160°F see drawing 556-101.
- Fire in Engine Room: locate heat detector at mid-height of space, set to sound alarm when temperature exceeds approximately 135°F, see drawing 401-101.
- Fire in Deck House Room: locate heat detector in overhead, set to sound alarm when temperature exceeds approximately 135°F.
- Main Engine low oil pressure, high jacket water temperature provided with engine purchase.
- Main Reduction Gear low oil pressure, high oil temperature provided with engine purchase.
- Diesel Generator low oil pressure high jacket water temperature provided with diesel generator purchase
- Low Compressed Air Pressure System set at 90 psig, see drawing 551-101.

Whenever any of the auxiliary alarm conditions is sensed, the system shall activate a loud bell or horn within the pilothouse. Simultaneously the individual alarm(s) which are activated shall be indicated on a lighted display panel, also located in the pilothouse. The labels on the visual indicator panels shall read as follows: "High Bilge Level (space)", "Steering hydraulic fluid low level", "Steering hydraulic fluid High Temperature", "Fire in (Space location)". The systems shall receive power from the Pushboat's 12 VDC system see drawings 401-101 and 321-102.

The auxiliary alarm system shall be Precision Digital 8-point Alarm Annunciator, or similar as shown on drawing 401-101.

The fire alarm system shall be Nautical Fire Suppression 2-Zone panel or similar as shown on drawing 401-101.

4.37 Metering

Gauges for electrical system shall include the following, see drawings 321-102 (DC) and 321-103 (AC):

- ammeter for Panel #4 in Pilothouse and Panel #3 in the Engine Room
- ammeter and voltmeter for 12VDC battery charger output (integral with the battery charger)

- (1) neutral to ground ammeter (drawing 321-103)
- Diesel Generator/Main Distribution Panel voltmeter, Frequency Meter, AC Ammeter, Power (KW) (drawing 321-103)
- Main Distribution Panel – Shore power Volts, Ammeter and remote (Pilothouse)

4.41 Communications
Two State Radios (owner furnished material) shown on drawing 401-101 shall be installed in the overhead of pilothouse. These radios shall be furnished with 12 VDC power as shown on drawing 321-102. Antennae shall be mounted on the pilothouse top in accordance with the Owner (or Owner's Representative).

Two VHF radios shall be installed in the overhead of the Pilothouse, approximately as shown on drawings 401-101 and 621-102. Each VHF radio shall be furnished with 12 VDC power as shown on drawing 321-102. The antenna for each radio shall be mounted on the Pilothouse top.

Talk-Back (TB) /Public Announcing (PA) speakers shall be provided as shown on drawing 401-101 located in Upper Engine Room, Deckhand Room, Upper Deck aft as shown on drawing 401-101. The 12 VDC powered Hailer/Intercom station for the PA system shall be provided in the pilothouse as shown on drawing 621-102.

Section 5 - Auxiliary Systems

5.05 General Piping Requirements
5.05.1 References

[1] Code of Federal Regulations - 46 CFR Sub-chapter F
[2] Code of Federal Regulations - 46 CFR Sub-chapter T (Barge Ferry)
[3] ABS Steel Barge Rules Part 4/Chapter 1 Pumps and Piping Systems (Barge Ferry)
[4] ABS River Rules Part 4 / Chapter 3 Pumps and Piping Systems (Pushboat)
[5] ASTM F1155-98
[6] ASME Code for Pressure Piping, B31.1 (formerly ANSI B31.1)

5.05. Introduction
This section provides general requirements for the design, fabrication, arrangement, installation, and cleaning of shipboard piping systems and piping components. Requirements unique to or supplemental to a specific system are covered by the appropriate section of this specification which governs that system. Where supplemental or differing requirements are in the section governing the system, that section of the specification's requirements takes precedence. All piping system design, material selection, installation procedures, and testing shall conform to the requirements of the Authoritative Agencies.

In the event that there is conflicting guidance in this specification and references listed above, the requirements of 46 CFR Subchapter T shall take precedence for the Barge Ferry and ABS River Rules_Part 4 / Chapter 3 - Pumps and Piping Systems shall take precedence for the Pushboat.

5.05.3 General Requirements:
All piping installations shall comply with the requirements of USCG 46 CFR Subchapter T (Barge Ferry), ABS Steel Barge Rules Part 4 Chapter 1 (Barge Ferry) and ABS River Rules (Pushboat).

Piping systems installed on the Ferry shall be designed and provided with the necessary piping, valves, regulation valves, safety valves, relief valves, flanges, fittings, pressure gages, liquid level indicators, thermometers, etc., for safe and efficient operations under all conditions of service.

Materials for pipes, valves and fittings shall conform to **TABLE 5.05-1** at the end of this section. System design, routing and final size selection shall be determined by the Contractor to suit particular requirements, such as allowable pressure drop, length of pipe run, pump characteristics and to avoid cavitation, erosion, water hammer and noise. except where specifically noted in the Technical Specification and Contract Drawings.

The general welding requirements of section II-1.00.4 of this specification and references listed above in this section of the specification shall apply. Pipe welding and brazing shall comply with 46 CFR 56.70. Joint design shall comply with 46 CFR 56.30 except as limited by the specification. ASTM F722 may be used as a guide.

Unless otherwise specified, ferrous pipe with welded fittings required to be galvanized shall be galvanized generally by the "hot dip" process; however ASTM A123/A123 and/or ASTM A153/A153M apply, as appropriate (see section I-100 of this specification for additional requirements). Where galvanizing is damaged during installation, GALVICON, or equal, brush-on galvanizing coating shall be applied on the damaged areas after appropriate surface preparation.

Piping shall be run as directly as practical with a minimum number of bends and fittings and with sufficient joints to provide for removal, inspection, and servicing of valves and equipment.

Piping systems shall be installed for easy access to valves and components for both operation and maintenance.

Bends or long radius elbows shall be used in place of short radius elbows wherever possible.

Care shall be exercised to ensure that piping system installations permit: free passage along walkways and ladderways; free access to perform operational and routine maintenance; free access to all doors, hatches and openings.

Where piping penetrates a watertight bulkhead, a deck or a tank, provide an approved penetration fitting to insure the water tightness of the structure. In no case shall the plating form part of a joint or piping.

Run piping to avoid cutting of the Vessel's framing where feasible. Structural penetrations shall be reinforced where required.

Piping shall be supported by hangers suitable for the material and service in accordance with ASTM F708, supplemented by the Manufacturer's Standardization Society (MSS) Standard Practice SP-69. The Contractor shall adjust the design, spacing and installation of pipe hangers as necessary. Hangers shall be welded to basic structure such as beams, frames, stiffeners, flat bar or angle run between stiffeners, or plate that is opposite support structure. Hangers for nonferrous pipe or tube and for hydraulic systems shall be synthetic rubber lined.

Sea inlets and discharges used in connection with the operation of machinery are to be fitted with readily accessible valves between the pipes and the shell plating or between the pipes and fabricated boxes attached to the shell plating. The valves may be controlled locally and are to be provided with indicators showing whether they are open or closed.

The seachest valve can be gate, ball or butterfly type , ductile iron ASTM 395 flanged or full lugged, 150# ANSI B16.5.

All gage line piping assemblies shall be in accordance with ASTM F721-81 requirements. Tubing and fittings are to be made from 316 stainless steel.

System piping and associated components shall be designed and installed to provide adequate flow to all equipment served under all normal operating conditions. The use of automatic regulators or restrictive devices, such as orifices, in lines servicing auxiliary components, such as heat exchangers, are permissible for obtaining and maintaining operational conditions, provided they do not impose undue restrictions, such as large pressure drops (necessitating an increase in pumping power) or destructive erosion conditions.

Orifices, where installed, shall be incorporated at flanged joints. The design and installation of orifice plates shall be such that a portion of each ("pan handle") extends visibly beyond the incorporating flanged joint and insulation if applicable. Orifice size shall be clearly stamped on the "pan handle".

All drain lines shall be designed and installed to provide a sufficient number of clean-out plugs/fittings to ensure clear access to each run of pipe from at least one end. Clean-out plugs/fittings shall be installed with the flow of the system media. Drains shall be located for easy accessibility and thorough draining of the system. Engine Room pump drains shall be routed to the bilge pockets.

Unavoidable high-points in closed piping systems shall be provided with vent fittings for air or gas removal. These high-point vents shall be provided with a ½ inch globe valve reduced to ¼ inch and provided with ¼ inch stainless steel tubing "gooseneck" to facilitate controlled venting into a cup or bottle.

Piping systems that rely on gravity for their motive force shall be sloped no less than ¼ inch per foot in longitudinal runs and ½ inch per foot on all transverse runs to ensure effective flow when combined with operational system static head. Slope the piping in each system to drain naturally to the low end.

In order to prevent damage to piping and joints at bulkheads and decks, provide expansion bends sufficient to accommodate piping movement due to working of the vessel's structure. Flexible connections shall be provided between piping assemblies and resiliently mounted equipment. Piping connected to reciprocating machinery shall have flexible connections, located as close to the machines as is practicable. All hose assemblies and installations shall meet 46 CFR 56.60.

All piping subject to mechanical injury shall be adequately protected. All guards shall be bolted in place, using stainless steel fasteners, so that they may be removed for repairs to piping.

During the fabrication, installation and testing of all piping systems, openings shall be kept tightly sealed to ensure foreign matter and moisture exclusion.

This includes components such as valves, pumps, coolers, heaters and instruments. Tape alone, or the use of wood blanks will not be an acceptable means of foreign matter and moisture exclusion. Use metal or plastic caps, plugs and blanks, or metal plugs and gags as appropriate to limit system and component contamination.

Unless otherwise specified in the Technical Specification, piping penetrating decks or bulkheads shall be provided with tight fitting, extra heavy collars or sleeve fittings (similar to a coupling fitting as set forth in ASTM F682, Type II), at all locations. All such sleeves or collars shall be fabricated with a vent hole, which shall be closed after all welding, brazing, and/or soldering is complete. Collars or sleeves shall be continuously welded to both sides of the structure. Pipes shall be continuously seal welded, brazed, or soldered, as appropriate, to both ends of the sleeve.

Connections to pumps and tanks, above 1½ inch nominal diameter shall be flanged. Connections of 1½ inch nominal diameter and below may be threaded with sufficient unions to permit removal of equipment. Where 150 pound steel flanges make up to valves or equipment with flat face flanges, the steel flanges shall be flat faced. Piping in way of pumps shall be provided with suitable takedown fittings to allow easy removal of the pump for servicing.

There shall be no unions installed in piping systems behind linings, or in inaccessible locations.

All piping systems shall be fitted with low-point drains. Exterior piping shall be fitted with shut-off valves and drains for freeze protection.

All valves shall be located so as to be accessible for ease of operation and repair. Manually operated valves shall generally be installed with the stems vertical. Where piping is below floor plates, the hand wheels shall be close to, but below the floor plates, with floor plate access provided over the hand wheels. Where unavoidable, solid reach rods shall be provided and securely attached to valves that would otherwise be difficult to reach. Reach rods shall be fitted with intermediate supports.

When reducers are required at pump inlets, provide eccentric type reducers in a horizontal plane with the straight side on top to prevent air-binding of the pump.

Discharge piping connected to self-priming and fire extinguishing pumps shall rise vertically not less than 30 degrees from the horizontal plane to permit self venting of air and/or gas.

Connections shall be provided for thermometers (with dry wells) and pressure gages as required to check proper operation of systems and/or equipment.

Pipe and/or tubing are not permitted in or on electrical cableway hangers, nor may they share deck and/or bulkhead penetrations.

All piping shall be fit without springing or forcing into place, and flange faces shall be parallel (plus $^{1}/_{32}$ inch, minus 0) before bolting.

Hydraulic piping shall utilize long radius bends of five (5) pipe diameters minimum (instead of elbows) except where the arrangement will not allow.

All gasket material shall be ***certified asbestos free and PCB free***.

All mechanical expansion joints and flexible connections shall remain unpainted.

Keep sounding tubes, air escapes, valve operating rods, etc., behind the face of stiffeners and frames where practicable.

Each bilge branch connection shall have a suction bellmouth or pipe reducer with the inlet diameter not less than 1½ times the pipe diameter. .

Keep fuel and lubricating oil piping away from engine exhaust pipes. Avoid routing pipes for liquid near electrical equipment as much as possible, and in no case locate flanges or joints over electrical equipment. In particular, do not run piping over the main distribution panel, motor controllers, distribution panels, and motors. Protective spray shields selected in accordance with ASTM F1138 shall be provided around flanged connections and valves where necessary to prevent the possibility of spray onto exposed hot surfaces.

All piping systems shall be inspected by the Contractor in accordance with requirements of the Authoritative Agencies (ABS/USCG).

5.05.4 Cleaning, Flushing and Testing

All piping, piping appurtenances, and associated equipment shall be thoroughly cleaned after fabrication. After installation and ***prior*** to pressure testing, each system shall be thoroughly cleaned of **ALL** foreign material utilizing the system's normal medium or an approved substitute.

Prior to final assembly, internal surfaces of newly fabricated diesel fuel, lube oil, and hydraulic fluid piping shall be cleaned by acid pickling (or by other approved means to remove scale and contaminants), oiled with system fluid to prevent corrosion, and preserved. All pickled and oiled piping shall have their ends sealed after cleaning until installation to preserve the interior pipe surfaces.

Prior to flushing of all silver-brazed or soldered piping, piping appurtenances, and associated equipment, these systems shall be thoroughly cleaned after installation in the vessel of all flux deposits. Flux deposit removal shall be accomplished by a twelve (12) hour soak with ambient fresh water followed by either a four (4) hour flush with ambient fresh water, or a one (1) hour flush with 100F degree (plus 30F degrees, minus 0F degrees) fresh water.

Prior to any flushing activities, such units as auxiliaries, heat exchangers and control valves having in-line mechanisms capable of trapping, or being affected by the carry-over of foreign matter, shall either be removed or blanked-off and bypassed.

Unless otherwise specified, system cleaning shall be accomplished using independent flushing machines using system fluids except that diesel fuel, when used as a flushing medium, shall not be heated.

Cleanliness for hydraulic systems shall be SAE Class 4 (ISO class 16/13) or better. Sumps, tanks and equipment which cannot be adequately flushed, shall be hand cleaned and inspected prior to service. After system flushing, drain all fuel, lube, and hydraulic oil used for flushing. Open and manually clean affected sumps and tanks with lint-free rags or other suitable wiping material to remove all traces of residual contamination and oil. Final inspection of oil sumps and closure of accesses is to be witnessed by the IDOT Representative. Close the sumps and tanks utilizing new gaskets and fill with new, clean oil.

TABLE 5.05-1

IDOT FERRY PIPING MATERIAL SCHEDULE

Piping System and Design Press. & Temp.	Piping				Valves		Bolting &	
	Size	Material	Takedown Joints	Fittings	Body	Trim	Gaskets	Remarks
FIREMAIN 150 psi 100F degrees	All	Carbon Steel Astm A-53, Galv Sched 40. Sched 80 For Barge Ferry Suction	Flange, weld neck or slip-on, 150# ANSI B16.5, Steel, ASTM A105	Buttweld, Sched 40, ANSI B16.9, steel, ASTM A234 Buttweld, Sched 80, ANSI B16.9, steel, ASTM A234 for Barge Ferry Suction	Gate, Ball, globe, butterfly, needle, check, & angle: R.S., O.S. & Y 150# threaded or flanged ANSI B16.5, Mal Iron, ASTM A197 or A395bronze, ASTM B61	Bronze, Stainless or Monel renewable seat & disk	Bolts: ANSI B18.2 galvanized steel, ASTM A307, Grade B Nuts: ANSI B18.2 galvanized steel ASTM A563 Grade A Gaskets: Garlock Blue Gard 3300 or equal	
BILGE SYSTEM 80 psi 100F degrees	2" & above	Carbon steel welded or seamless, SCH 40, ASTM A53, Grade B, Type S or E, galvanized	Flange, weld neck or slip-on, 150# ANSI B16.5, steel, galvanized, ASTM A105	Buttweld, SCH 40, ANSI B16.9, steel, galvanized ASTM A234, GR WPB	Gate, ball, butterfly, globe & angle: R.S., O.S. & Y 150# flanged or threaded ANSI B16.24, mal iron, ASTM A197 or A395	Bronze, Stainless Steel or Monel renewable seat & disk	Bolts: ANSI B18.2, galvanized steel, ASTM A307, Grade B Nuts: ANSI B18.2, galvanized steel ASTM A563 Grade A Gaskets: Garlock Blue Gard 3300 or equal	Bilge piping shall be hot-dip galvanized after fabrication.
BILGE SYSTEM, cont'd	1½" & below	Carbon steel welded or seamless, SCH 40, ASTM A53, Grade B, Type S or E, galvanized	Union, Socket weld Class 3000, ground joint ANSI B16.11 or flange, socket weld or slip-on, 150#, ANSI B16.5, steel, ASTM A105 or A181, galvanized	Socket weld Class 3000, ANSI B16.11, steel, galvanized, ASTM A105 or A181	Ball, check , 150#, socket weld ends, ANSI B16.11, steel, galvanized ASTM A216	Stainless steel ball TFE seats & seals		

TABLE 5.05-1

IDOT FERRY PIPING MATERIAL SCHEDULE

Piping System and Design Press. & Temp.	Piping				Valves		Bolting &	
	Size	Material	Takedown Joints	Fittings	Body	Trim	Gaskets	Remarks
FRESH WATER COOLING SYSTEM (Machinery Coolant) 50 psi 150-250F degrees	2" & above	Carbon steel welded or seamless, SCH 40, ASTM A53, Grade B, Type S or E	Flange, weld neck or slip-on, 150# ANSI B16.5, steel, ASTM A105	Buttweld, SCH 40, ANSI B16.9, steel, ASTM A234, GR WPB	Gate, globe & angle: R.S., O.S. & Y 150# flanged ANSI B16.5, mal iron, ASTM A197 or A395	Bronze or Stainless renewable seat & disk	Bolts: ANSI B18.2 galvanized steel, ASTM A307, Grade B Nuts: ANSI B18.2 galvanized steel ASTM A563 Grade A Gaskets: Garlock Blue Gard 3300 or equal	Flexible connections: USCG 46CFR56.60 Approved
	1½" & below		Union, Socket Weld Class 3000, ground joint ANSI B16.11 or flange, socket weld or slip-on, 150#, ANSI B16.5, steel, ASTM A105 or A181	Socket weld 3000#, ANSI B16.11, steel, ASTM A105 or A181	Ball valve, 150#, socket weld ends, ANSI B16.11, steel, ASTM A216	Stainless steel ball TFE seats & seals		
FUEL SYSTEM (Diesel Oil Service, Filling & Transfer) 150 psi 125F degrees	All	Carbon steel seamless, SCH 40, ASTM A106, Grade B	Flange, Socket weld or slip-on 150#, ANSI B16.5, steel, ASTM A105	Socket weld Class 3000, ANSI B16.11, steel, ASTM A105	Ball, check valve, type, 300# socket weld ends, ANSI B16.11, steel, ASTM A216	Stainless steel ball viton seats & seals	Bolts: ANSI B18.2 galvanized steel, ASTM A307, Grade B Nuts: ANSI B18.2 galvanized steel ASTM A563 Grade A Gaskets: Garlock Blue Gard 3000 or equal	Flexible connections: USCG 46 CFR56.60 Approved

TABLE 5.05-1
IDOT FERRY PIPING MATERIAL SCHEDULE

Piping System and Design Press. & Temp.	Piping				Valves		Bolting &	
	Size	Material	Takedown Joints	Fittings	Body	Trim	Gaskets	Remarks
LUBE OIL SYSTEM (Lube Oil Service Filling & Transfer) 150 psi 200F degrees	1½" & below	Carbon steel seamless, SCH 40, ASTM A106, Grade B	Flange, Socket weld or slip-on 150#, ANSI B16.5, steel, ASTM A105	Socket weld Class 3000, ANSI B16.11, steel, ASTM A105	Gate, globe & angle R.S., O.S. & Y, 600#, socket weld, steel, ASTM A105 Ball valve, swing-out wafer type, 150# socket weld ends, ANSI B16.11, steel, ASTM A216	Stainless steel renewable seat & disk Stainless steel ball Viton seats & seals	Bolts: ANSI B18.2 galvanized steel, ASTM A307, Grade B Nuts: ANSI B18.2 galvanized steel ASTM A563 Grade A Gaskets: Garlock Blue Gard 3000 or equal	Flexible connections: USCG 46 CFR56.60 Approved
DECKS DRAINS (Weather Deck Drains) 50 psi 100F degrees	All	Carbon steel welded or seamless, SCH 40, ASTM A53, Grade B, Type S or E, galvanized	None	Buttweld, , ANSI-B16.9, steel, galvanized, ASTM A234, GRADE WPB	None		Bolts: ANSI B18.2 galvanized steel, ASTM A307, Grade B Nuts: ANSI B18.2 galvanized steel ASTM A563 Grade A Gaskets: Neoprene cloth inserted	
VENTS 50 psi 100F degrees	All	Carbon steel welded or seamless, SCH 40, ASTM A53, Grade B, Type S or E, galvanized	Flange, weld neck or slip-on, 150#, ANSI B16.5, steel, galvanized, ASTM A105	Buttweld, SCH 40, ANSI-B16.9, steel, galvanized, ASTM A234, Grade WPB	None		Bolts: ANSI B18.2 galvanized steel, ASTM A307, Grade B Nuts: ANSI B18.2 galvanized steel ASTM A563 Grade A Gaskets: Garlock Blue Gard 3300 or equal	

TABLE 5.05-1

IDOT FERRY PIPING MATERIAL SCHEDULE

Piping System and Design Press. & Temp.	Piping				Valves		Bolting &	
	Size	Material	Takedown Joints	Fittings	Body	Trim	Gaskets	Remarks
COMPRESSED AIR SYSTEM 150 psi and below 100F degrees	All	Carbon steel seamless, SCH 40, ASTM A106, Grade B	Unions, Socket weld or threaded, carbon steel, ASTM A 105/A 105M, MSS-SP-83 Flanges, Socket weld or slip-on 150#, carbon steel, ASTM A105, ANSI B16.5	Socket weld, , steel, ASTM A 234/A 234M or ASTM A105/ 105M ANSI B16.11	Ball valve, Bronze, Flanged ASME SB61 or SB62 MSS-SP-72 Check valve, Carbon steel, Flanged, ASTM A216 / A216M or ASTM A105 / A 105M ANSI B16.34	Ball valve: Bronze Check valve: CRES	Bolts: ANSI B18.2 galvanized steel, ASTM A307, Grade B Nuts: ANSI B18.2 galvanized steel ASTM A563 Grade A Gaskets: Neoprene cloth inserted	Flexible connections: Authoritative Agency approved
SSDG, PROPULSION ENGINE SYSTEMS (Diesel Engine Exhaust) 775F degrees maximum	All	Carbon steel welded or seamless, ASTM A53, Type S 6" and below SCH 40	Flange, slip-on, 125# L.W., ANSI B16.1, steel, ASTM A105	Buttweld ANSI B16.9 steel, ASTM A234, Grade WPB 14"& above, SCH 10 8" to 14", 0.250" wall 6" & below, SCH 40	Gate, globe & angle R.S. O.S. & Y, swing check 125# flanged, ANSI B16.5, ASTM A105	Stainless steel renewable seat & disk	Bolts: ANSI B18.2, ALLOY STEEL, ASTM A193, Grade B7 Nuts: ANSI B18.2, ALLOW STEEL, ASTM A194, Grade 2H Gaskets: Garlock graph-lock laminated 3125 or equal	Category materials are temperature limited. Flexible Connections: Stainless steel bellows type, flanged 125#, ANSI 16.1, EJMA standards.
SSDG, PROPULSION ENGINE SYSTEMS (Diesel Engine Exhaust) 1100F degrees maximum	All	CrMo Steel seamless or welded ASTM A335, GR P11 or ASTM A387	Flange, slip-on, 125# L.W., ANSI B16.5, CrMo steel, ASTM A182, GR F11	CrMo steel buttweld ANSI B16.9 6" & below, SCH 40	Gate, globe & angle R.S., O.S & Y, swing check, 125# flanged, ANSI B16.5, CrMo steel	CrMo steel renewable seat and disk	Bolts: ANSI B18.2 CrMo steel, ASTM A193, Grade B6 Nuts: ANSI B18.2 CrMo steel ASTM A194, GR B4 Gaskets: Garlock	Category materials are temperature limited Flexible Connections: CrMo steel bellows type flanged 125#, ANSI B16.1, EJMA standards

5.08 Insulation and Lagging for Piping, and Machinery

5.08.1 Reference

[1] ASTM F683 - Standard Practice for Selection and Application of Thermal Insulation for Piping and Machinery

5.08.2 General

This section provides general requirements for thermal insulation of machinery, equipment and piping to reduce the rate of heat transfer and to protect personnel; and vapor barrier application to prevent insulation from absorbing moisture. Special application and installation techniques shall be used where necessary to prevent condensation, icing and freezing problems associated with the low temperature environment. The primary protection from freezing is by piping system drainage. The Pushboat and Barge Ferry firemain and bilge pumping systems are provided with a means for draining when not in-use, see sections II-5.21 and II-5.29 of this specification.

All materials shall be certified asbestos free. Certifications shall be provided to the Owner (or Owner's Representative).

Provide insulation and lagging for machinery, piping systems and components, in accordance with ASTM F683-03a except where otherwise specified, using materials approved by the USCG. For the Pushboat and Barge Ferry the only two piping systems that require insulation include the Main Engine and Diesel Generator exhaust piping within the Engine Room and accessible sections of jacket water piping systems.

Do not insulate the piping systems which carry compressed air, lube oil, hydraulic oil or fuel oil.

Exhaust piping within the Engine Room shall be insulated from its supports.

Pre-lagged insulation, meeting the separate insulation and lagging requirements, may be used if of a type that can be readily applied, fastened, removed, and reused. All insulating materials shall be properly secured to prevent sagging and to permit ready removal if required for maintenance of equipment. All material and adhesives shall satisfy the requirements of the Authoritative Agencies, including specifically the requirements of 46 CFR 164.

All insulation shall be protected from the effects of physical damage and external moisture.

Required testing of piping shall be complete before pipe covering is installed over joints.

See section II-6.31 of this specification for painting of surfaces before and after application of insulation and lagging. Insulation and linings for structural bulkheads and decks shall be in accordance with section II-6.35 of this specification.

Provide piping insulation for the various services according to **TABLE 508-1** below.

Select thickness to provide surface temperature less than the values given for the various services in **TABLE 508-1.** In no instance shall the thickness be less than one (1) inch. Provide lagging over all insulation, unless specifically exempted.

TABLE 508-1
Insulation Materials

Service	Fluid Temp	Surface Temp	Insulation Material
Main Engine and Ship's Service Diesel Generator Exhaust	800 °F	133°F	**Insulation Blankets:** • Stainless Steel wire mesh 0.008 in. Wire, No. 60 density, against pipe. • 1,200°F degree needled glass or ceramic fiber mat, one (1) inch minimum thickness (Inner layer). • Glass or ceramic insulative wool, thickness to suit. • Cover with coated fiberglass (STEVENS 2025, Finish 9383 inside and 2025, Finish 9649 outside, or equal). • Secure in place with stainless lace and hooks.
Engine jacket water	190 °F	125 °F	Removable blanket of fibrous glass cloth lagging. Only in areas subject to personnel contact. Not required below the engine room grating.

Note: Lagging, except as noted, shall be glass cloth of weights appropriate for the pipe size.

For fire protection, surfaces that are excluded from insulation requirements and can attain a temperature of 400F degrees or higher shall be shielded if impingement of a flammable fluid on these surfaces is a possibility.

Where there is danger of personnel coming in contact with non-insulated hot piping, the piping shall be enclosed in shielding with approximately a 1/2 inch stand-off.

A vapor barrier shall be applied to all insulation to prevent penetration of moisture. Vapor barriers shall remain intact and continuous over the areas protected by means of sealed joints and edges.

In locations where the completed insulation and lagging is subject to physical damage, provide protective 20-USSG galvanized sheet metal over the insulation and fabric lagging. Protective sheet metal lagging shall be installed where insulation can become oil or water soaked, and in areas of heavy traffic.

5.12 Heating Ventilation and Air Conditioning (HVAC) Systems

5.12.1 Pilothouse Air Conditioner and Heater
The Pilothouse shall be furnished with a deck-mounted, electric natural convection heater, located approximately as shown in drawing 512-101. Heater shall be CHROMALOX Model H-2407, 240 Volt, 60Hz 1 phase or equal, rated at 3 kW.

Heater shall be installed following manufacturer's recommendations. Ensure adequate clearance is provided between heater and deck to facilitate natural circulation in accordance with manufacturer's recommendations. Heater shall include a built-in thermostat and high temperature limit switch (thermal cut-out). The heater frame shall be grounded to steel structure.

The Contractor shall provide a Coleman Seamach marine model 48203-8666 or equal,13,500 Btu/hr, 120 VAC single phase, 60 Hz Pilothouse Top mounted air conditioner (A/C) installed in accordance with drawing 512-101. The Contractor shall ensure deck penetration is provided with a weathertight seal following A/C manufacturer's recommendation.

Test weather deck penetration by performing a water hose test by directing a solid stream of fresh water, at a pressure of at least 30 psig from a nozzle with minimum inside diameter of ½ inch, against the exterior surfaces at all seams of deck mechanical joint. The stream shall be applied at a distance to joint not to exceed 5 feet. Zero leakage shall be the standard.

Provide remote thermostat controls at a centralized location within the Pilothouse that is protected from direct sunlight. The A/C unit shall have an outside air damper for both A/C and fan only capability which can be used for ventilation of the pilothouse.

The Contractor shall provide and install a window defroster mounted below the forward pilothouse console as shown in drawing 512-101. One acceptable model is a Dometic Marine model PHDCM rated for 1.5kW @305 cfm with electrical power requirements of 240 VAC, 1 phase, 60hz. The Contractor will ensure adequate clearance and fire protection is provided around the window defroster heater unit. Provide a removable louvered access panel which is sufficient size to remove the defroster unit for maintenance, as shown in drawing 512-101. Install insulated, fire resistant flexible ducting from the defroster unit to each of the three front pilothouse windows using adjustable diffusers to direct the defroster air flow at the windows. Use the maximum diameter size ducting that space will allow beneath the control console, but no less than 3 inch diameter (3-5 inches). Run ducting the shortest and most direct route avoiding any sharp bents.

Two oscillating fans, Guest model H900, 12 VDC, 150cfm or equal shall be mounted to the forward pilothouse overhead, port and stbd, as shown on drawing 512-101.

5.12.2 Deckhand Room Air Conditioner and Heaters

The Deckhand Room shall be provided with two forced air heaters with built-in blowers, such as the CHROMALOX RSFM 210 IIST-L model or equal. Each heater shall be rated at 1 kW minimum output for a total room heating rate of 2 kW, one each mounted at port and starboard sides as shown on drawing 512-101. The heater/blower units shall be 120VAC, single phase, 60 Hz power as provided on drawing 321-101.

The Contractor shall provide a Carrier Marine Model KCB233P or equal, 22,350 Btu/hr, 240VAC, single phase, 60 hz forward wall mounted air conditioner (A/C) installed in accordance with drawing 512-101. The Contractor shall ensure bulkhead penetration is provided with a weathertight seal following A/C manufacturer's installation recommendations. Test bulkhead penetration by performing a water hose test by directing a solid stream of fresh water, at a pressure of at least 30 psig from a nozzle with minimum inside diameter of 1/2inch, against the exterior surfaces at all seams of the mechanical joint. The stream shall be applied at a distance to joint not to exceed 5 feet. Zero leakage shall be the standard.

Provide local thermostat controls at a centralized location within the Deckhand Room that is protected from direct sunlight. Provide remote shutdown at the pilothouse console for Deckhand room A/C and heaters. The A/C unit shall have an outside air damper for both A/C and fan only capability which can be used for ventilation of the Deckhand Room.

5.12.3 Engine Room Ventilation

Engine Room supply ventilation shall be provided by a 10,000 CFM vane axial fan installed in accordance with drawing 512-102. Supply inlet is via port and starboard weather deck louvers installed at aft end of Pilothouse void space and size as shown on drawing 512-102. A single natural exhaust louver shall be installed in the Engine Room aft port upper casing, located and sized as shown on drawing 512-102. Supply and exhaust weather deck louvers shall be the suitable materials for marine environment, self draining type and provided with 1/2" bird/rat screen protection.

The Engine Room supply fan shall be HARTZELL model A53C-297VA-STAIKD or equal, 10,000 CFM, @0.9 in W.G., 3 HP motor, 1140 rpm, 240 VAC, single phase 60hz with an inlet bell. The supply fan shall be mounted using vibration isolation mounts.

Engine Room supply fan ventilation ducting shall be fabricated using 16 gauge galvanized steel and provided with acoustic liner (sound lined).

Local pushbutton controls are to be provided for the Engine Room supply fan. The local control push button with light indicator shall be located inside the aft Engine Room door near entrance stairway.

5.12.4 Venting of Other Spaces – Pushboat and Barge Ferry Void Spaces

Natural ventilation shall be provided for the four void spaces within the Pushboat hull, using goosenecks and automatic closing vent-check valves. Goosenecks shall be oriented so as to minimize the interference with Pushboat topside deck access. See drawing 611-101.

The Pilothouse Void space shall be provided with a louver in the access door to provide sufficient ventilation for the battery.

The eight Barge Ferry voids shall be provided with natural ventilation port and stbd using goosenecks with screens as shown on drawing 180-201. Goosenecks shall be oriented so as to minimize the interference with Barge Ferry deck access. See drawing 801-201 for arrangement.

5.21 Fire Main System

The fire main system shall be installed by the Contractor, as shown in drawing 529-101 for the Pushboat. The Barge Ferry shall be provided with separate fire main system in accordance with drawings 529-201 and 500-201. Both the Pushboat and the Barge Ferry fire pumps provide for the respective vessel's bilge pumping systems, see section II-5.29 of this specification. Installation of piping, valves and equipment shall be in accordance with general piping requirements section II-5.05 of this specification and this section of the specification.

5.21.1 Pushboat

The Contractor shall provide a belt driven pump which functions as both the fire pump and the bilge pump for the Pushboat. The fire/bilge pump shall be provided with a foundation and aligned for a clutchable belt driven arrangement, driven by the port main engine left hand auxiliary SAE A drive and remote mechanical cable actuated clutch.

The clutch shall be manually actuated by a remote reach rod. The clutch remote operator deck box shall be co-located with the sea valve remote operator, next to the upper deck fire station as shown on drawings 233-102 and 529-101.

The belt-driven fire/bilge pump shall be a Barnes Model 25 ICU-1, self-priming, or equal. The Fire/Bilge pump shall have the following characteristics:

- Design Point: 160 gpm at 143.5 ft freshwater Total Head at maximum engine rpm (2200)
- Self-Priming Centrifugal pump
- 3 inch Suction and Discharge
- Arranged and Mounted for CCW pump rotation(looking from pump driven end)
- Pulley Drive Ratio ωpmp/ωpto of 1.6 (3300rpm/2112 rpm(.96 X2200 Engine rpm), based on Barnes 25 ICU-1 pump curve and John Deere Aux Gear Drive))
- Clutch, pulley and belt system shall be rated for a minimum of 12 hp continuous transmitted power.
- A manually actuated clutch, TB Woods Roto-Cam Model C245118 or equal with “A” sheave variant, datum diameter M =3.75 inches, driven by main engine auxiliary drive.

The fire pump and engine auxiliary drive belt driven pulley’s shall be setup to operate pump at 3300 rpm when engine is run at full power 2200 rpm to provide 80 gpm to each of the two Pushboat fire hose stations. Fire/Bilge pump shall be mounted on a foundation so that shaft is aligned parallel and outboard the port main engine left-hand auxiliary gear drive to minimize belt length as shown on drawing 529-101. The belt material shall be fire resistant material. The belt and pulleys shall be of the V-type belt design and provided with a machinery guard in accordance with section I-15 of this specification.

For fire main service, the fire pump is arranged to take suction from the seachest and provide 160 gpm water total supply to the two installed fire hose stations when required by remote opening of the sea valve then remote manual actuation of the clutch to start the pump.

The Contractor shall provide two fire hose stations for the Pushboat that are USCG approved and include a 50 ft, 1-1/2 inch inside diameter, approved under UL Standard 19 or fed-spec-ZZ-H-451-E fire hose; fire hose nozzle shall be of the combination type, approved in accordance with 46 CFR 162; Fire Main cutout valve, and spanner wrench.

The fire hose cabinets shall be constructed of sheet metal or fiberglass. The fire hose shall be attached to the Fire Main discharge valve. Each Fire Station shall be identified with fire red colored cabinet and or nearby bulls eye and 3 inch high white lettering stenciled on or next to the cabinet in accordance with USCG requirements.

The seachest intake valve shall be provided with both local and remote operator from a station located next to the fire pump clutch remote cable actuator. Remote valve operator shall be of the flexible shaft type, Elliott Manufacturing Company, or approved alternate. The deck box and remote valve operator shall be Elliott Manufacturing Co type or approved alternative and provided with label plate and valve position indicator unit (showing full range of valve Open to Closed position). Remote operation shall be by a handle or valve handwheel mounted and supported in accordance with remote operating gear manufacturers recommendations and provided with labels to clearly identify open/closed position and purpose of the actuator. Provide fire station red markings for and labeling on bulkhead to properly identifying this as a Fire Fighting station.

The sea intake line shall be fitted with a simplex strainer, 3 inch minimum, Tate Andale Model F, or equal, with cast steel body and a 304 stainless steel basket having 3/16" diameter perforations and arranged as shown on drawing 529-101. Seachest shall be constructed of schedule 80 galvanized steel fully welded construction in accordance with ABS River Rules.

5.21.2 Barge Ferry –Fire Main System

The Barge Ferry fire main system shall be constructed and installed in accordance with drawing 529-201 using schedule 40 galvanized steel pipe ASTM A-53.

Two semi-portable, self-priming gasoline engine driven pumps model AMT 5830-96 or equal shall be provided. The aft engine driven pump serves primarily as the Barge Ferry fire pump and secondarily as a bilge pump. The forward engine driven pump is the primary bilge pump. Both the aft fire/bilge and the fwd bilge pump shall be provided as a skid (roll frame) mounted unit with an integral fuel tank that provides 120 minutes run time on one tank of gasoline. The Contractor shall provide a foundation frame welded to the barge deck to mount the two pumps securely with fastener and brackets necessary to prevent movement during vessel operations. Both pumps must be directly connected to the bilge 3” square tube bilge suction header by resilient connections. The aft Fire/Bilge pump discharge is rigidly connected to the 2” fire main header to provide raw water to the two fire hose stations located on port side as shown on drawings 555-201 and 529-201. Both pumps shall be capable of providing a minimum 50 gpm at a pump outlet pressure of not less than 60 psi. Provide a 0-120 psi dial type, pressure gage at each pump outlet using stainless steel tubing and installed in accordance with requirements of ASTM F721-81 (2004). Pressure gages are to be suitable for all weather conditions for the operating area.

The Contractor shall provide two fire hose stations for the Barge Ferry that are USCG approved and include: a 50 ft, 1-1/2 inch inside diameter, approved under UL Standard 19 or fed-spec-ZZ-H-451-E fire hose, fire hose nozzle of the combination type approved in accordance with 46 CFR 162, fire main cutout valve, and spanner wrench. The fire hose stations are to be located and installed per drawings 555-201 and 500-201.

The fire pump suction pipe shall be 2 inch NPS schedule 80 galvanized steel and supported by rigid pipe hangers along outboard side of the barge ferry.

5.29 Bilge Piping System and Oil Pollution Abatement

5.29.1 Pushboat

The Pushboat Bilge pumping system shall utilize the engine belt-driven fire/bilge pump common with fire main system as specified in section II-5.21 of this specification and shown on drawing 529-101. Individual bilge suction branches shall be provided for After Peak, Aft Void, Engine Room PT/STBD (2), Tank Compartment (1), and Forepeak (1). Bilge suction pipes shall be 1 1/2" NPS schedule 40 galvanized steel ASTM A-53. The number of bends and elbows shall be minimized. Bilge suction strainers shall be located directly on the bottom shell plate.

A single common bilge valve manifold shall be provided at the Engine Room Forward bulkhead, located slightly above grating level and conveniently accessible by crew. Piping shall be routed in such a way that it does not pass over or come in close proximity to: battery charger, electrical distribution panels, or motor controllers. Every effort shall be made to eliminate low spots in the piping which will collect water when the system is not running. Where low spots are unavoidable, they shall be provided with small drain connections. Unnecessary high points should be eliminated from suction piping to avoid formation of air pockets.

Provide vent plugs at necessary high points of suction piping, if any, to allow for venting of air pockets.

Bulkhead piping penetrations between compartments shall be watertight and constructed in accordance with general piping section II-5.05 of this specification and mechanical general notes on drawing 500-101.

Six bilge high level alarms shall be provided with 12 VDC float switches for remote indication on the Pilothouse Console. Float switches shall be positioned to activate alarms when bilge level reaches approximately 3” above lowest point in compartment. The locations of the two (2) float switches in the Engine Room are to be approximately as shown in drawing 233-101.

For bilge pumping service, the system is set to take suction from any of 5 watertight compartments as shown on drawing and discharge over the portside. Every effort shall be made to eliminate low spots in the piping which will collect water when the system is not running. Where low spots are unavoidable, they shall be provided with small drain connections for freeze protection during winter.

Two stuffing box sump pumps, Lovett Model 1200 (1200 Gal/Hr capacity), or equal, shall be provided port and stbd as shown on drawing 529-101. The two sump pumps shall be automatic and provided with 12 VDC electric power as shown on drawing 321-102. Each sump pump is to be provided with a separate overboard discharge with a discharge check valve installed next to the overboard hull penetration. The overboard hull penetration shall be located approximately 6ft above baseline, as shown in drawing 233-102.

5.29.2 Barge Ferry – Bilge System

The Barge Ferry Bilge system shall be constructed and installed in accordance with drawing 529-201 using galvanized steel pipe and Contractor fabricated common square tube manifold. Bilge suction is provided by either the forward bilge or aft fire/bilge gasoline engine driven pumps described in section II-5.21.2 of this specification.

Individual bilge suction branches shall be provided for each of the seven (7) barge voids. Bilge suction pipes shall be 1-1/2" NPS. Pipes shall be schedule 40 galvanized steel ASTM A-53. The number of bends and elbows shall be minimized and piping run along portside of voids as shown on drawing 529-201. Bilge suction strainers shall be located directly on the bottom shell plate, near the end of compartment which is closer to midships so as to minimize the length of piping.

A single common Bilge valve manifold shall be provided on the portside of the Barge Ferry deck outboard the life rail so that it is conveniently accessible by crew. Every effort shall be made to eliminate low spots in the piping which will collect water when the system is not running. Where low spots are unavoidable, they shall be provided with small drain connections and freeze protection. Piping shall be routed so that it does not interfere with accessibility through void manholes.

Bulkhead piping penetrations between compartments shall be watertight and constructed in accordance with general piping section II-5.05 of this specification and mechanical general notes on drawing 500-201.

5.29.3 Containment Coamings and Drip Pans

Built-in continuously welded steel coamings shall be installed integral to the foundation around the base of all pumps, engines and all other equipment which convey any fluid/ effluent other than fresh water, or which utilize diesel, lubricating and/or hydraulic oils. Foundation coamings and/or permanent stainless steel drip pans shall also be provided at other locations where oily fluids may accumulate during operation or maintenance.

Coamings shall be at least 3/16 inch thick × 1-1/2 inches high (2 inches for engines), and of plan dimensions suitable for the equipment. Coaming dimensions shall conform to containment capacity requirements of regulations where applicable. Coamings shall be installed at the base of foundations or incorporated into the tops of foundation pedestals as best suits the design for particular equipment items.

Stainless steel drip pans shall be permanently installed beneath such items as strainers, filters and oil burners. Drip pans shall be #11 gauge × 1-1/2 inches high, and of plan dimensions suitable for the equipment.

Except as otherwise specified herein, foundation coamings and drip pans shall be fitted with valved and capped drain lines with sufficient space at the piping terminus for gravity draining contents into a portable container. Drain piping shall be sloped about 1/4 inch per foot where possible.

5.51 Compressed Air System

5.51.1 General

The Contractor shall provide a compressed air system, consisting of primary and backup air compressors, desiccant air dryer, receivers, distribution piping, fittings, gages, and controls to supply compressed air throughout the Ferry. Primary uses of compressed air shall be as follows: starting air for the two main engines; Pushboat whistle, general ship's service distribution system for maintenance air hose quick connections, tow connection aft latch, and Barge Ferry safety barrier actuation cylinders. Compressed air system equipment and piping distribution system shall be installed in accordance with drawing 551-101 and the general piping requirements of section II-5.05 of this specification.

5.51.2 Air Compressors

The primary air compressor shall be provided as complete package integral with a 80 Gallon Receiver, control system, relief valves, and associated tubing/piping, such as Ingersoll Rand Model 2475N5-P Premium Package or equal. The air compressor package must meet the following specifications:

- Maximum compressor rated output pressure 250 psig
- On/Off Pressure – Packaged system maximum operating pressure 175 psig
- 80 gallon integral vertical air receiver with automatic drain valve rated to 200 psig, ASME sec Viii &CRN, floor mounted
- Relief valves for air receiver, discharge, and intercooler
- Air inlet filter
- 5 hp 230 VAC motor

The packaged compressor shall be electric motor driven air-cooled, two-stage compressor rated for maximum 250 psig, with automatic un-loader, adjustable off/on pressure switch, air filter, hour meter and air cooled inter and after coolers, belt guard and accessories. The maximum design operating pressure for the packaged air compressor is 175 psig. Automatic start-stop pressure controls shall be provided and set for intermittent operation, with staggered compressor cut-in and cut-out pressures.

The air system pressure display shall be located on a gage board in a location within the Engine Room and remote digital on Pilothouse console with a low pressure alarm switch/indicator set at 90 psig.

A backup air compressor shall be provided which is driven by the starboard main engine rear facing auxiliary gear drive as described in section II-2.33 of this specification and provided as a John Deere option with the engine. The backup air compressor runs continuously while engine is operating. Normal operation is to be setup so that the automatic unloader valve for the backup air compressor discharges air to the Engine Room. The Contractor shall provide an acoustic silencer at the unloader discharge outlet. The automatic unloader shall be set to charge the air 200 gallon service air receiver, when receiver pressure drops below 105 psig. The primary air compressor shall be setup to maintain 200 gallon service air receiver pressure at 140 psig service air system maximum design working pressure.

5.51.3 Air Receivers and Dryer

The primary air compressor shall be provided with an integral 80 gallon air receiver rated for a maximum working pressure of 200 psig. The primary desiccant air dryer shall be provided in series with the air compressor, Ingersoll Rand D341M or equal. A secondary air dryer rated to 180^{o}F shall be provided in parallel with the primary air dryer for bypass operation when environment conditions drive the primary air dryer inlet air temperature above 120 ^{o}F. The maximum designed air inlet temperature for the primary desiccant air dryer is 122^{o}F.

One 200 gallon compressed air receiver shall be provided to service the 140 psig service air system as shown on drawing 551-101.

Each receiver shall be manufactured to comply with U.S. Coast Guard 46 CFR Subchapter F requirements. Each receiver shall be fitted with a pressure gage, relief valve, drain connection, and inlet and outlet connections. Horizontal receivers shall have inlet and outlet connections on opposite heads and as high as possible in the receiver.

5.51.4 Starting Air Piping

Main engine starting air is supplied from the 100 psig service air system via a pressure regulating valve. The main engine starting pressure regulating value set point shall be 60 psig. The pressure regulating valve shall be of the full flow type with manual bypass and setup to supply the TDI 306 starting air motors following air motor and engine manufacturer's recommendations. Starting air shall be provided for each main engine and transitioning through high pressure flexible hose connections at the starting air motors. Engine start solenoid control valves shall be 12 VDC with both local actuation and remote from the Pilothouse Console.

5.51.5 Service Air Piping

The Ferry service air system shall be supplied by the 200 gallon primary receiver to maintain a normal working pressure of 100 psig via a pressure regulating valve. The pressure regulating valve shall be full flow with manual bypass. Service air shall be provided for the following systems and compartments:

- Pushboat ship's whistle (with automatic condensate trap and freeze protection).
- Tool/service outlet quick disconnect in the engine room
- Barge Ferry fwd and aft safety barrier pneumatic cylinders and actuators.
- Tow Linkage – Pushboat aft latch hook pneumatic cylinder drawing 611-203.

The tool/service air quick disconnect station location shall be approved by the Owner (or Owner's Representative).

Filters shall be provided as shown on drawing 551-101.

5.51.6 Installation

All pipe connections to the air compressors and receivers shall be reinforced stainless steel flexible hose with wire-braid, capable of handling hot high pressure air, SAE J-1942 and J-1475. Horizontal runs of piping shall be pitched to drain toward the air receivers where possible. Low-points shall be fitted with drain valves located eighteen (18) inches below the main line low-point. Strainers shall protect the air start valves, reducing stations, and other items of equipment supplied with compressed air.

5.51.7 Cleaning

Thoroughly clean all compressed air piping and tubing systems by flushing with hot water and detergent, rinsing, drying and blowing clean and dry filtered air. Each compressed air valve station or service termination shall be demonstrated clean. Compressed air connections shall not be made to any user equipment until the system has been proven clean.

System cleanliness shall be evidenced by passing compressed air through a muslin cloth until there is no visible evidence of accumulated debris and/or restricted flow.

All air receivers shall be cleaned of debris and accumulated moisture removed prior to being closed and placed into service. The closing of the receivers shall be witnessed by the Owner (or Owner's Representative).

5.51.8 Spare Parts and Instruction Manuals

Provide a list of recommended spare parts and special tools, for those items which are Contractor furnished, together with parts lists and instruction manuals necessary to maintain and service provided equipment and accessories.

5.52 Portable Fire Extinguishers

The Contractor shall provide four (4) portable fire extinguishers for the Barge Ferry and 3 for the Pushboat. The portable fire extinguishers shall be provided, stowed in suitable brackets, and located generally as shown in drawing 555-001 for the Barge Ferry and on drawings 233-101, 621-101, 621-102 for the Pushboat. All portable fire extinguishers shall be USCG approved and U/L Listed, Size II, multipurpose Type - ABC, dry chemical, AMEREX Model B456 or equal.

A USCG approved semi-portable CO2 ANSUL model 433541 or equal fire extinguisher shall be provided and secured in the main deck portside Pushboat Fire Fighting Gear Locker. The semi-portable fire extinguisher shall have a minimum capacity of 100 lbs and be provided with a forty (40) foot discharge hose with nozzle.

5.61 Rudders and Steering System

The Pushboat steering system provides for full maneuverability of the Ferry in both the ahead and astern directions. The steering gear shall include two steering rudders installed aft of the propulsors and four flanking rudders installed fwd of the propulsors as shown on drawings 562-101 and 562-102. The steering and flanking rudders shall be provided with electronic FFU rudder controls. The steering rudders stocks, and tiller arms and actuators shall each be suitable for a working torque of 15,000 ft-lbs. The flanking rudders, stocks, and tiller arms and actuators shall each be suitable for a working torque of 7,500 ft-lbs. Hydraulic system design operating pressure is 1500 PSI. The steering and flanking rudder systems are configured to provide full rudder swing from 40 degrees port to 40 degrees starboard within 14 seconds.

5.61.1 Rudders and Rudder Stocks

Rudders, rudder stocks, and rudder stock tubes are to be fabricated and installed as shown in drawings 562-101, 562-102, and 562-103. The steering and flanking rudders shall be fitted and welded to the rudder stocks as shown on drawing 562-102.

All exterior welding of the rudders shall be ground smooth to prevent erosion due to turbulence.

The steering rudder stocks shall be 4 inch outside diameter and the flanking rudder stocks 3-1/2 inch outside diameter, fabricated from stainless steel Aqualoy 17, see drawing 562-101. The rudder stocks with welded on rudders shall be held in place and alignment with the steering gear by the clamping force of the Kobelt tiller arms obtained with the Kobelt steering gear system described in section II-5.61.2 of this specification.

The Contractor shall provided final boring and keyway machining for the two steering rudder twin tiller arms Kobelt 7094T-20-35, two outboard flanking rudder twin tiller arms Kobelt 7094T-20-35, and two inboard flanking rudder single tiller arms Kobelt (similar to) 7094S-20-35. Tiller final machined bores, keyways and fitted square tapered keys dimensions and tolerances shall be in accordance with drawings 562-101, 562-102, and 562-103 and Kobelt recommendations.

A backup keeper plate shall be fabricated and installed at the top of each rudder stock as shown on drawing 562-103.

The rudder stocks and tiller arms shall each be supported by a bronze thrust washer, upper and lower bearings installed with materials, set screws and sizes as shown on drawing 562-101 and bearing manufacturer's recommendations. River water shall be prevented from entering the upper rudder stock bearings by means of a double-lip seal (the upper lip pointing up and the lower lip pointing down) installed between the lower end of the upper bearing and the rudder stock as shown on drawing 562-101. Installation shall be in accordance with seal manufacturer's recommendations.

Rudder stops with hard rubber pads are to be provided and installed by the Contractor to contact the tiller arms at 39 degree rudder angle Port/Starboard as shown on drawing 562-101.

Grease fittings, stainless steel grease tubing and supports shall be provided at an accessible location on the main deck near each rudder tiller arm to allow greasing of the bronze thrust and upper rudder stock bearings, see drawing 562-101.

The final as-machined tiller bore, keyway and dimensions, tiller arm clamping fastener final torque values, double lip seal installation and bearing clearances shall be documented by the Contractor and a copy provided to the Owner (or Owner's Representative).

5.61.2 Steering Gear, Hydraulic System and Controls

The Pushboat steering gear system components shall be procured as a complete package from Kobelt Manufacturing Co. Ltd and installed by the Contractor in accordance with the system diagram drawings 556-101, 562-101 and steering gear provider's recommendations. The Contractor may propose an alternate steering gear provider following the "or equal" requirements defined in section I-11.1 of this specification.

The Contractor procured Kobelt major steering system components shall include:

- Two Twin Tiller Arms - Steering Rudders
- Two Twin Tiller Arms - Outboard Flanking Rudders

- Two single Tiller Arm - Inboard Flanking Rudders
- Tie bars, Hydraulic Cylinders, Rod ends, and associated connection hardware
- Hydraulic Components including:
  - Cross Port Bypass Valves
  - HPU Manifold mounted and piped to HPU Tank (two of one-station valve base with SEA -0 ring ports, Preset system relief valve, two 12 Vdc solenoid valves closed center soft shift, two dual pilot operated check valves, two adjustable flow control valves, oil filled pressure gage and isolator, and low pressure switch)
- 50 gallon HPU hydraulic oil Reservoir (horizontal foot mounted steel,Vescor 10050, Stauff 10 micron return line filter with visual indicator & SW, Oil level/thermometer sight glass, low level and high temperature switches for remote visual and audible alarms on Pilothouse console, filler/breather, cleanout covers, suction strainer, auto-fill, servo return and other ports as needed painted white)
- Two Hydraulic Steering Pumps (Vickers-Eaton pressure compensated piston pumps Model 70423 with 2 bolt mounting, SAE B-B mount, and AA input shaft 0.9835" diameter 15T 16/32 DP 30 degree involute flat root spline, Rear Porting, PC valve preset to 1500 psi, rated to 7.5 gpm at 650 rpm, maximum 3000 rpm, Right Hand rotation (clockwise viewed from input shaft)).
- Rudder FFU control system (12 Vdc, Rudder Feedback unit Kobelt 7174-B, FFU Amplifier Kobelt 7173-K, Stacked FFU lever black with 20" and 16" handles Kobelt 7195-B, Rudder Angle Indicator Master Kobelt 7175-MY).
- Installation and Operating Manuals

See drawings 556-101 and 562-101 for additional steering system components and material specifications and requirements.

The hydraulic control system shall be a 12 Volt DC and 1500 psi hydraulic system installed in accordance with drawing 556-101, Kobelt's Installation and Operations Manual, and equipment manufacturer's recommendations.

The port and starboard Vickers Eaton piston hydraulic steering pumps Model 70423 shall driven by the PTO provided on the back of each Twin Disc reduction gear, driven by the main engines. The steering hydraulic pumps operate at same rpm as the main engines with hydraulic output pressure maintained at 1500 psi by the preset pump pressure compensating valve.

The Contractor shall provide all equipment, foundations and supports, piping and fittings, electrical wiring, label plates necessary to provide a complete installation.

5.61.3 Hydraulic Fluid and Cleanliness

The hydraulic fluid shall be environmentally friendly petroleum-base oil which complies with 46 CFR 58.30-10, steering pump manufacturer and steering gear provider's specifications for the hydraulic system. The selection of hydraulic fluid shall be approved by the owner. The hydraulic fluid that is specified shall be marked on the system fill cap or on a permanent label mounted near the HPU Reservoir system fill. Hydraulic fluid must be filtered, in accordance with machinery manufacturer's instructions, prior to filling the system.

Entire system shall be cleaned to SAE Class 4 (ISO Class 16/13) or cleaner prior to start-up and the Pushboat shall be delivered with system cleaned to this standard or better.

5.61.4 Hydraulic Piping Interconnection

General piping requirements of section II-5.05 of this specification shall also be followed. Note that hoses which are acceptable to USCG are listed in the current edition of SAE J1942. Hose fittings shall be in accordance with SAE J1475. Hose shall be installed in accordance with the hose manufacturer's recommendations.

Installation of hydraulic lines shall provide sufficient flexibility to absorb movements caused by hull flexing and by thermal gradients from cold start-up to continuous operation of the system under load. Radius of pipe bends shall be no smaller than four times tube outer diameter. Preferred pipe bend radius is five diameters or greater.

Threaded fittings shall be employed only where necessary for connection to equipment.

Hydraulic lines shall be supported at intervals of no more than two feet. Inaccessible hydraulic lines installed vertically may be supported at greater intervals. Segments of hydraulic lines which are subject to being trod on in service must have supports spaced no further apart than one foot. Clips used to support hydraulic lines shall be of a design which will not cut or abrade the hydraulic line.

5.75 Vehicle Ramp and Safety Barrier Pneumatic System

Sections I-1.90 and I-1.91 of this specification addressed structural requirements for vehicle ramps and safety barriers. The hinged vehicle ramp is to be supported by a fixed kingpost and lifting chain as shown in drawing 584-201. A ratchet type turnbuckle is to be installed on both the port and stbd lifting chains for each ramp. The ratchet turnbuckles are to be position so that they can be easily reached by the Deckhand to adjust ramp height to align with the shore landing ramp. The Contractor shall provide a separate port and starboard safety chain for each ramp. The safety chains are designed to carry the full load of the ramp in event of a lifting chain failure.

Pneumatic system components for the Barge Ferry vehicle safety barrier shall be provided as shown on drawing 551-201 and installed in accordance with drawings 575-201 and 575-201. Each Ramp shall be provided with two (port and starboard) pneumatic cylinders that are fitted and aligned for smooth operation for raising and lowering the safety barrier. Separate pneumatic cylinders are to be provided as shown on drawings 551-20 and 575-202 to lock the Safety barrier in the raised position. The system shall be supplied with dry air to prevent freezing from the Pushboat compressed air system as shown in drawing 551-101. Local control stations for both the forward and aft ramps and safety barriers shall be provided by the Contractor and located on a pedestal at both port and starboard sides, so that they can be controlled from either side.

Pneumatic hose and hose fittings shall be in accordance with SAE J1942 and SAE J1475, respectively. Pneumatic hose lengths shall be sufficient to permit the full range of articulated motion in the safety barriers, but not excessively long. Pneumatic hoses shall be installed in accordance with the hose manufacturer's recommendations. Hoses shall be routed in such a way as to minimize the risk of damage from vehicles and pedestrians passing over the ramps.

5.81 Anchoring

The Contractor shall provide and install a 150H Danforth Type Anchor, Winch, and Rode on the barge as shown on drawing 180-201.

5.82 Mooring Lines

Six (6) 1" diameter nylon lines, Samson "2-in-1 Super Strong", or equal, having breaking strength at least 32,600 pounds, shall be provided.

Each mooring line shall be at least 25 feet long or other requirement as determined by IDOT.

5.83 Lifesaving Appliances and Arrangement
All lifesaving appliances (life jackets and ring buoys) shall be provided by the Contractor.

5.83.1 Barge Ferry
Four (4) USCG approved ring buoys shall be mounted on brackets furnished by the Contractor at locations and configuration (with/without throwing lines or waterlights) as shown in drawing 555-201.

Life jackets shall be stowed in five (5) lockers shown on drawing 555.201. The Contractor shall provide 150 Adult and 75 Child size USCG approved life jackets for passenger Ferry in accordance with 46 CFR Subchapter T, 180.71 and either 46 CFR subchapter Q 160.002, 160.005, or 160.055 Type I PFD. All Life jackets shall be labeled in accordance with 46 CFR Subchapter T 185.605.

5.83.2 Pushboat
Three (3) USCG approved ring buoys shall be mounted on brackets at locations shown in drawings 621-102 and 801-101.

Six (6) USCG approved life jackets 46 CFR subchapter Q 160.002, 160.005, or 160.055 Type I PFD shall be provided for crew members. In addition, Four (4) Type V Work Vest 46 CFR Subchapter Q 160.053 with reflective tape shall be provided for the crew and stowed separately from life jackets.

Section 6 - Outfit and Furnishings

6.01 Marking, Labeling, Notices
The Pushboat Official Number shall be permanently affixed on the forward surface of bulkhead plating at frame 22, in accordance with 46 CFR 67.121.

The Barge Ferry name shall be permanently marked and also painted in four exterior locations on the side shell port and starboard, forward of the bow and aft of stern draft marks, similar to other IDOT ferry barges.

The Pushboat's name shall be permanently marked and also painted in three exterior locations on the side shell port and starboard, near the bow and on the transom. The Pushboat's hailing port shall, likewise be permanently marked on the transom. Letters shall be not less than four inches high and in accordance with 46 CFR 67.123(b). Outline of each letter shall be inscribed by punch marking or by other suitable means.

Life jacket lockers on the Barge Ferry shall be marked and provided with Placards for donning and use of lifejackets in accordance with 46 CFR 185.516: Mark life jacket lockers with " Actual # (30-50, for 150 total) ADULT LIFE PRESERVERS" and "75 CHILDREN'S LIFE PRESERVERS".

Piping for the following systems shall be marked by an approved system of color coding, including directional arrows where appropriate to indicate unidirectional flow: fire main, bilge pumping system, jacket water cooling systems, steering hydraulic system interconnection lines, diesel fuel oil system, lube oil, and compressed air systems. All valves shall be identified by permanent markings which will make clear the function of the valve.

For the four remote controlled valves on the Pushboat and for the fire pump clutch actuator, provide a label plate, showing identity and direction of closing, near each respective remote actuator. On the Barge Ferry, safety barrier directional control valves shall be appropriately labeled.

Fire hose stations shall be marked with red lettering as "FIRE HOSE".

The exterior side of door to the Pushboat pilothouse, Engine Room and Deckhand Room and the inboard side of gates in the Barge Ferry guard railing, shall each be marked "NO ADMITTANCE, CREW ONLY".

A cast metal **builder's plate** may be fitted by the Contractor. If fitted, the nameplate shall show only the following information and its design and location shall be approved by the owner. If engraved, the letters shall be filled with black paint.

Name of vessel
Year of build
Builder's name and location
Yard number
Designer's name and location: "Art Anderson Associates • Bremerton, Washington"

All **gages and thermometers** located inside the Pilothouse and Engine Room shall be marked in such a way that their function is clear.

Each **pump** shall be labeled in such a way that its function is clear. Hydraulic steering pumps shall be differentiated as port and starboard units.

A warning notice in Pushboat Engine Room and Barge bilge pumping stations, pursuant to 33 CFR 155.450 relative to the prohibition on discharge of oil shall be provided.

The USCG **Certificate of Inspection, certificate expiration date sticker,** and any other documents and notices which may be required by USCG shall be suitable mounted on the Barge Ferry at location approved by Owner (or Owner's Representative).

Notices posted within view of passengers on the deck, to read as follows:

"NO SMOKING"

"24-HOUR FERRY INFORMATION (Phone #, website)

"Set Parking brakes. Do not start engine until ferry is secured at landing and operator has lowered the ramp Safety Barrier" (posted at both ends of Barge Ferry)

See section II-6.31 of this specification for additional Barge Ferry car deck safety markings.

6.03 Draft Marks

Draft marks shall be affixed to the vertical sides of the Barge Ferry hull in the following locations: port and starboard sides in the vicinity of frames 5 and 29, as shown on drawing 631-201. Each set of draft marks shall include the numerals "1", "2", "3", "4". Each numeral shall be six inches high, formed by a weld bead or punch marks, and painted white. The vertical reference (zero) for the draft marks shall be the vessel baseline.

6.04 Security - Padlocks

Contractor shall provide door locks and/or hasps and padlocks (Tempo 125TWP, or equal) for overnight securing of the following closures:

- Four (4) Barge Ferry life jacket lockers (one padlock for each closure)
- One (1) Access door Void below Pilothouse
- One (1) Pushboat fire fighting locker

All of the above padlocks shall be keyed alike. Five keys shall be provided.

6.22 Gratings

Gratings shall be installed in the Pushboat Engine Room, generally as shown in drawings 233-101 and 233-102. Gratings and supporting structure shall be of sufficient strength to carry a uniform load of 80 pounds per square foot throughout, and simultaneously a concentrated load of 400 pounds applied over an area 10”x10” at any one location.

The top surface of gratings shall be generally 18” above the bottom shell. Raised stiles shall be located over the propeller shafts, as shown on the drawings.

Grating shall be either a) steel (galvanized) with raised patterns (such as diamond tread or perforated Ry-Tread), or b) molded fiberglass (such as Fibergrate 1 1/2" square pattern).

Grating panels shall be supported by and laid in a framework of steel angles, which are, in turn, welded to the hull structure. Panels shall be of a size to be conveniently handled by one person. Panels shall give sectionalized access to all piping and equipment below the grating. Particular care shall be taken to provide portable or hinged panels giving access to equipment that is accessed during operation of the Pushboat, such as valves. Panels shall be secured in place with stainless steel fasteners, which do not present tripping hazards or other hazardous protrusions.

6.23 Deck Fittings, Railing, and Ladders

The Barge Ferry shall be provided with 4 Cleats on side opposite from the Pushboat and four Bits on the Pushboat side as shown on drawings 623-201 and 623-202.

The Pushboat shall be provided with six steel mooring cleats, located and welded as shown on drawing 611-101. Pushboat cleats shall be 18" long, Schoellhorn-Albrecht No. 7257 or equal.

The Barge Ferry shall be provided with an A-frame stowage staff on the Pushboat side as shown on drawing 623-201, which can be used for stowage of the Barge Ferry tow linkage A-frame in the raised (vertical hinged) position when not in service.

The structure in way of cleats, bitts and chocks is to be suitably reinforced by installation of headers, additional beams, brackets, or doubling plates.

Deck railing and ladders shall be furnished and installed as shown in drawings 611-101 and 611-102 for the Pushboat, and in drawings 623-201 and 623-202 for the Barge Ferry.

6.25 Pushboat Doors and Windows

6.25.1 Doors

Seven exterior doors shall be as shown on contract guidance drawings and in accordance with Table 6.25. The two Deckhand Room door locks shall take a common key. The two Engine Room door locks shall take a common key. Five duplicate keys of each different lock shall be provided.

Table 6.25 Pushboat Doors

Location:	Pilothouse (Aft)	Engine Room (Aft)	Engine Room Escape (P)	Deckhand Room (P&S)	Fire Fighting Locker (P)	Void below Pilothouse (aft)
clear opening size (H x W)	78"x28"	76"x32"	54"x28"	78"x28"	78"x18"	36"x24"
sill/coaming height (abv steel deck)	minimal	6"	12"	1½" approx	1½" approx	6" max
type	Weathertight	Watertight (Quick-Acting)	Watertight	Weathertight	NWT	NWT
materials	Aluminum Skins; Rigid Foam Core	Aluminum Skins; Rigid Foam Core	Aluminum Skins; Rigid Foam Core	Aluminum Skins; Rigid Foam Core	3/16" Steel Plt	3/16" Steel Plt
hinges	(3) stainless steel	(3) stainless steel	(3) stainless steel	(3) stainless steel	(3) stainless steel	(2) stainless steel
dogs	-	6	2	-	-	-
latches; locks	stainless steel lever; mortise lock	stainless steel lever; mortise lock	stainless steel lever; mortise lock	stainless steel lever; mortise lock	stainless steel lever	stainless steel lever
hold-back device; door closer	hook, door closer	none	none	hook, door closer	hook	none
window:	fixed	fixed light (12" dia)	fixed light (round)	fixed	no	none
louver:	no	no	no	no	louver	louver
Maker	Freeman	Freeman	Freeman	Freeman		
Door Model -	1120	1430	1130	1120		
Suggested Frame Model-	0641-1019	0641-1025	0641-1025	0641-1019		
Remarks:				open inward		

6.25.2 Windows

Except for the Engine Room, all window glass, including the windows in the doors, shall be Thermopane (i.e. insulated, double pane) glass.

All window glass, including the windows in the doors, shall be either laminated glass or tempered safety glass. Thickness of Thermopane glass shall be ¼". Thickness of glass in Engine Room windows, including the windows in Engine Room doors, shall be either 3/8" or 1/2".

Window glass in the Deckhand Room shall be tinted. All other windows shall be clear glass.

Window frames shall have nominal 3" radius, except for the forward windshield frame, which shall have square corners.

Twelve windows shall be provided in the Pushboat Pilothouse, in addition to the windows in the Pilothouse doors, as shown in drawing 621-102. The middle window on the port side and the middle window on the starboard side shall be of the sliding horizontal opening type, Freeman Model 5320-1001, or equal. The forward windshield shall be in three sections, approximately 90" x 32" overall; Cornell-Carr Model CC-1046, or equal. The remaining nine pilothouse windows shall be fixed windows, Freeman Model 5120-1001, or equal.

Four windows shall be provided in the Pushboat Deckhand room, in addition to the windows in the doors, as shown in drawing 621-101. These shall be fixed windows, Freeman Model 5120-1001, or equal.

Three windows shall be provided in the upper Engine Room, in addition to the windows in the doors, as shown in drawing 801-101. These shall be fixed windows, Freeman Model 5120-1001, or equal. Window frames shall be aluminum, bolt-in type. Fasteners shall be stainless steel. Frames shall be installed using bedding compound or bedding tape, so that they are galvanically isolated from the steel bulkheads.

6.25.3 Window Shades

The side windows in Pushboat Pilothouse shall be provided with interior shades, incorporating Phifer Wire Products, Inc. "SheerWeave" fabric "Style 3000", or similar. Three shades are required to cover the windows on port side; three shades are required to cover the windows on starboard side. The choice of fabric will allow good visibility through the shade when it is drawn down. Color shall be approved by the Owner (or Owner's representative). Fabric shall have UV blockage rating of 80% or more. Shades shall be custom-fabricated so as to neatly cover the window glass. Shades shall be mounted on individual rollers, similar to "Rollease" roller shade system, available from Atrium Shade Co., Seattle, WA, (www.atriumshade.com).

6.25.4 Window Wipers

Three 12 VDC electric window wipers shall be provided: one for each of the forward Pilothouse window panes. Window wipers shall be furnished with two-speed motors and stainless steel wiper arms. The window wipers shall be Marinco, or equal. Marinco part numbers are shown below:

- Waterproof motor: Model AFI-2.5 (80° sweep is preset, but should be adjusted to 45°)
- Wiper arm: Model 33086 (adjustable 20" to 25")
- Wiper blade: Model 33023 (24")

6.31 Painting

These general requirements apply to all paint performance and activity ordered by the Contract Documents.

6.31.1 General Painting Requirements

6.31.1.2 References

[1] Visual Standard for Abrasive Blast Cleaned Steel [SSPC-VIS-1-89] forms a part of this Contract and will be used to judge the adequacy of the surface preparation.

[2] Visual Standard for Power and Hand Tool Cleaned Steel [SSPC-VIS-3] forms a part of this Contract and will be used to judge the adequacy of the surface preparation.

[3] Steel Structures Painting Manual, Volume 2, Systems and Specifications [Fifth Edition] Chapter 2, titled Surface Preparation Specifications, shall be used to define the degree of surface preparation as required by this Specification.

[4] Paint Manufacturer's Specification.

6.31.1.3 Requirements

SSPC-SP 12/NACE5 Surface Preparation and cleaning of Steel and Other Hard Materials by High-and Ultrahigh-Pressure Water jetting Prior to Recoating. SSPC Publication No. 96-05.

Surface preparation specified to be SSPC-SP10, "Near-White Blast Cleaning" shall be to SSPC Surface Preparation Specification No. 10 as defined in Chapter 2 of SSPC Volume 2.

Surface preparation specified to be SSPC-SP6, "Commercial Blast Cleaning", shall be to SSPC Surface Preparation Specification No. 6, as defined in Chapter 2 of SSPC Volume 2.

Surface preparation specified to be SSPC-SP7, "Brush-off Blast Cleaning", shall be to SSPC Surface Preparation Specification No. 7, as defined in Chapter 2 of SSPC Volume 2.

Surface preparation specified to be SSPC-SP3, "Power Tool Cleaning", shall be to SSPC Surface Preparation Specification No 3, as defined in Chapter 2 of SSPC Volume 2.

Surface preparation specified to be SSPC-SP11, "Power Tool Cleaning to Bare Metal", shall be to SSPC Surface Preparation Specification No. 11, as defined in Chapter 2 of SSPC Volume 2.

The Owner (or Owner’s Representative) will designate the areas to be surface prepared, painted and the paint color/colors to be used unless otherwise designated in the Specification.

The Contractor shall prepare surfaces and apply paint products in strict accordance with the manufacturer's instructions and as specified in the Contract Documents. Surfaces shall be prepared for painting in accordance with guidelines from the Steel Structure Painting Council (SSPC) or as called out specifically in the body of this section. Where "other equivalent standards" are permitted by the Contract Documents, Contractor recommended "other equivalent standards" for surface preparation shall be affirmatively endorsed by the paint manufacturer's representative, in writing, before submittal to the Owner (or Owner’s Representative) for approval. Where the Contract Documents conflict with the manufacturer's instructions, the manufacturer's instructions shall prevail. Promptly notify the Owner (or Owner’s Representative) when the Contract Documents conflict with the manufacturer's instructions.

All hardware, windows, light fixtures, placards and signs, cables, and adjacent equipment and structure shall be properly masked off when the surrounding areas are being painted. Masking tape shall be removed within 24 hours from when it was applied. Items and surfaces to be protected may be removed, moved, or otherwise protected as interferences, at the preference of the Contractor, but shall be restored to their pre-removal form, appearance, and function at completion of the paint work. Upon completion of the work, any over spray shall be removed as directed by the Owner (or Owner’s Representative).

The Contractor shall not paint in wet, windy or high humidity weather unless the work is well protected from such conditions, and then, only with the approval of the Owner (or Owner’s Representative) and the paint manufacturer's representative.

The Contractor shall provide all necessary safety equipment as recommended by the manufacturer and regulatory authorities for the safe handling of each of the products used during these projects. The Contractor is cautioned that the paint products may be hazardous during the painting process and the Contractor's employees must be protected accordingly.

The Contractor shall grit blast the areas designated in each area to SSPC-SP6, unless otherwise designated in the Specifications.

Existing paint coating bordering spot blasted areas shall be feathered to achieve a smooth transition appearance, ensuring that edges are feathered to make a smooth visual appearance to existing coating and that no rough or sharp edges can be seen between existing and newly applied paint.

Grit blasted surfaces or any prepared surfaces shall have a profile depth of 2 to 4 mils.

Immediately after grit blasting, clean affected spaces and surfaces of blasting material and residue.

The blasted areas shall be coated the same day with paint to hold the blast. If the blasted areas cannot be coated before the surface remains exposed overnight, sand sweep to remove rust bloom prior to applying the paint.

Care must be exercised to see that dust and grit are not imbedded in soft paint in the areas adjacent to the blasting.

Prior to coating application, ensure that all surfaces are dry and free of foreign matter.

Surface preparation and paint coating applications are to be in accordance with the paint manufacturer's specifications, using either airless spray or conventional spray equipment. The back sides of angles, edges of structural shapes, and areas that are incapable of being properly covered by using conventional or airless spray equipment shall be hand-brushed to ensure that the minimum dry film thickness is obtained.

Thinning is not normally required or desirable, and shall not be done unless authorized by the Owner (or Owner’s Representative). Solvents used for thinning and cleaning shall be in strict accordance with the paint manufacturer's recommendations, and shall be handled, stored, and disposed of in strict accordance with current laws, rules, or regulations, whether local, State, or Federal, pertaining to toxic and/or hazardous waste.

Dry film thickness (DFT), where specified, is the minimum dry film thickness in mils.

Where both film thickness and number of coats is specified, both requirements must be fully met.

Instruments used to measure film thickness shall have been recently calibrated in accordance with SSPC-SP-PA2, and shall be routinely re-calibrated if requested by the Owner (or Owner’s Representative).

Particular attention shall be paid to the temperature and humidity conditions at the time of application.

Keep surfaces clean and moisture-free during the coating process and during the curing period.

Prior to the application of any follow-on coat, thoroughly clean and build up any bare or lightly covered spots in the previous coat to the required thickness. Dirt, drips, runs, and sags are to be removed prior to follow-on coating application.

The finish coat is to completely obscure the undercoat, and be free of surface imperfections such as dirt, drips, runs, sags, dry spray and other imperfections. The finish coat is to have a smooth and glossy appearance when dry, except for areas requiring otherwise, i.e. navigation light screens.

Where any coating has been damaged by welding, burning, or other causes, repair the damaged area by blasting or power sanding, ensuring that edges are feathered to make a smooth visual appearance to existing coating and that no rough or sharp edges can be seen between existing and newly applied paint; and no sanding swirls or other marks will remain after the final coat is applied.

During inclement weather, provide surface protection (tarpaulins, plastic sheeting, etc,) for areas being painted. Provide heaters and dehumidification equipment as necessary to achieve proper surface temperature and dew point spread, per manufacturers' application instructions. All painting shall be done under conditions of temperature and relative humidity specified by the paint manufacturer.

Clean affected spaces and surfaces of paint over-spray immediately. Care shall be taken to prevent damage to such items.

Deck coating may be applied by roller or other means recommended by the manufacturer.

Painting and inspections shall be scheduled for daylight hours only.

Upon completion of blasting and before inspection of a blasted area, all grit shall be removed from the inspection area by blowing down with air or other means. Upon completion of inspection and acceptance of blasted area by the Owner (or Owner’s Representative), and before paint application, all blasting media shall be removed from all surfaces. Decks shall be broom clean.

The Owner (or Owner’s Representative) will inspect all prepared surface areas upon completion of preparation, and before any paint is applied on prepared surfaces. Upon completion of each paint coat, the Owner (or Owner’s Representative) will inspect painted area for proper paint application before the next coat is applied. It is the responsibility of the Contractor to ensure that all required inspections are completed before continuing work.

NOTE: It is incumbent upon the Contractor to provide the Owner (or Owner’s Representative) with timely notification in order to preclude delays in required inspections.

Failure to obtain the Owner’s (or Owner’s Representative’s) approval, where required, may require re-preparation and coating, wholly at the expense of the Contractor.

The Owner may enlist the services of the paint manufacturer's representative to assist the Owner (or Owner’s Representative) in overseeing the preparation of the surfaces and paint application.

The Owner (or Owner's Representative) may conduct or request of the Contractor, the following tests:

- Surface profile gage readings.
- Wet and dry film thickness gage readings.
- Holiday inspection, using a high or low voltage holiday detector.
- Surface temperature gauge readings.
- Dry film thickness gauge readings using a Tooke gauge.
- Surface contamination.

Carefully mask and protect machinery, motors, electrical panels and boxes, wiring, ventilation ducts, tank vents, void vents, name plates, identification labels, valve stems, fire hoses, bright work, glass trim, wiring, light fixtures and other such items and materials which could be damaged by water, abrasive blasting, dust associated with the process, or other surface preparation techniques, or which could have their function and appearance degraded by blasting or paint over-spray. If removal is required, **Note and Map** the location of all items removed. Upon completion of painting, all items removed shall be re-installed in their original locations.

All plastic and brass signs in affected work areas shall be masked or removed, prior to painting or grit blasting, to prevent damage. If removal is required, **Note and Map** the location of signs. Upon completion of final paint coating, all signs removed shall be re-installed in their original locations, using new 316 stainless steel fasteners where applicable.

All painted stencils and markings affected by grit blasting or painting shall be re-painted upon completion of final paint coating in their proper color and location.

All windows shall be protected from blasting or painting by a protective covering, using plywood or other means determined to be satisfactory by the Owner (or Owner's Representative). Affected windows shall be hose tested upon completion of paint work. Upon completion of cleaning and painting, all windows affected by the work shall be washed.

Ventilation fans shall be sealed and protected prior to surface preparation work in the immediate vicinity. They shall be unsealed upon completion and acceptance of all application of paint.

Decks in area of painting shall be protected in order to prevent paint over-spray. All over-spray shall be removed upon completion of painting.

Doors leading to spaces shall be repainted to their proper color as required.

Care shall be taken when washing or blasting doors to prevent warping or any damage of doors or the surrounding area.

Vent screens installed in vent bells shall be protected against blasting and painting.

All car deck and above car deck valve handles shall be painted in their proper colors.

All protective covering shall be removed upon completion of final paint coating.

All work under this Contract shall be coordinated with painting to ensure a complete and proper coating system, and to prevent damage to coatings, and re-work.

6.31.1.4 Galvanized

For galvanized paint application, new surfaces will be prepared using SSPC 1, “Solvent Cleaning” to remove "grease" or as required by this specification.

Upon the acceptance of the surface preparation by the Owner (or Owner’s Representative), apply acid etch primer formula 117 or equal at 0.3 mils (DFT). Within twenty-four hour maximum of apply primer, apply a coat of INTERNATIONAL, Intertuf 262 coat at a minimum of 5 mils (DFT) unless otherwise specified.

Upon the acceptance of the INTERNATIONAL, Intertuf coat by the Owner (or Owner’s Representative), apply a final coat of INTERNATIONAL, Intercare 755 of proper color at 2 mils, (DFT) minimum, to cover, unless otherwise specified.

6.31.2 Barge Ferry - Car Deck Non-Skid and Safety Markings

6.31.2.1 Description

This specification details the requirements for painting Barge Ferry car deck (main deck) Non-skid and safety markings or repair of isolated car deck areas on Barge Ferry. The Contractor shall prepare and paint car deck non-skid areas and striping of car lanes, curbs, and safety walkways following the drawing provided, see references below. Paint for this work shall be selected, provided, and applied as directed by the paint manufacturer’s representative.

6.31.2.2 References

[1] Drawing 631-201 Paint Scheme - Barge

[2] Paint manufacturers specifications. Specifications may vary for different manufacturer’s paint system applied.

[3] Visual Standard for Abrasive Blast Cleaned Steel [SSPC-VIS-1-89]

6.31.2.3 General Requirements

All non-skid areas, Car Lane, Walkways and Safety markings are identified in drawing 631-201.

The approximate surface areas of applied paint products are provided below. These surface areas should be used for convenience when preparing estimates only. It is the Contractor’s responsibility to complete the work defined in this specification. The extent of work is not limited by the estimated surface area of application or by the volume of paint necessary to complete the work.

- Approximate Surface Area for Application of Non-Skid: 4500 ft2
- Approximate Surface Area for Application of Line Paint: 500 ft2

6.31.2.4 Definitions

Near-White Blast Cleaning - Surface preparation specified to be SSPC-SP10, "Near-White Blast Cleaning" shall be to SSPC Surface Preparation Specification No. 10 as defined in Chapter 2 of SSPC Volume 2.

Line Paint - The paint to be used for striping and painting the car lane lines, curbs and safety walkways as identified on drawing 631-201 Paint Scheme – Barge.

Non-Skid - The paint to be used for applying non-skid to the car deck surface, as identified on drawing 631-201 Paint Scheme – Barge.

Deck Paint – The paint used to cover areas of the deck that do not require non-skid.

6.31.2.5 Car Deck Paint Requirements

Primer/Based Coat - Paint Type: The primer base coat paint is to be INTERNATIONAL Paint Intershield 300V Bronze Color, abrasion resistant, cold weather cure, aluminum filled, surface tolerant epoxy anticorrosive or another product with equivalent performance and compatible with the finish paints. Dry film thickness (DFT) shall be a minimum 5 mils, 6-8 mils.

2nd Coat with Non-skid - Paint Type: The second coat paint type shall be INTERNATIONAL Paint Intershield 300V Aluminum Color, abrasion resistant, cold weather cure, aluminum filled, surface tolerant epoxy anticorrosive applied with 7754 D non-skid or another product with equivalent performance and compatible with the finish paints. Apply second coat minimum 24 hours after application of 1st coat. Minimum and maximum dry time between coats can vary with air temperature; consult paint manufacturer's guidelines for specific coatings. The non-skid paint should have the following appearance when dry: dark matte finish when viewed under lighting conditions typical to a sunny day with full spectrum sunlight. Dry film thickness (DFT) shall be a minimum of 5 mils, 6-8 mils.

Deck Paint finish coat type: For deck areas without non-skid the first two coats are Intershield 300V Bronze (minimum 5 mils, 6-8 mils) and Intershield 300V Aluminum (minimum 5 mils, 6-8 mils) without the non-skid. The deck finish coat shall be applied to the entire deck after minimum dry time for both non-skid and areas without non-skid. Deck finish coat shall be Interthane 990 Storm Grey or another product with equivalent performance and compatible with the primer paint. The car-lane line, safety aisle and curb paint should have the following appearance when dry: dark grey high gloss finish when viewed under lighting conditions typical to a sunny day with full spectrum sunlight. Dry film thickness (DFT) shall be a minimum of 2.0 mils. Apply deck finish paint after minimum 24 hours after application of 2nd coat. Minimum and maximum dry time between coats can vary with air temperature; consult paint manufacture's guidelines for specific coatings.

Line Paint Finish Type: Paint type for the line striping and Safety walkways to be INTERNATIONAL Paint Interthane 990, Signal Yellow (Curbs, Car Lanes, Safety Aisle) and Red (Safety Aisle Lettering) or another product with equivalent performance and compatible with the primer paint. The car-lane line, safety aisle and curb paint should have the following appearance when dry: yellow high gloss finish when viewed under lighting conditions typical to a sunny day with full spectrum sunlight. Dry film thickness (DFT) shall be a minimum of 2.0 mils. Apply Line paint after minimum 24 hours after application of deck finish coat. Minimum and maximum dry time between coats can vary with air temperature; consult paint manufacture's guidelines for specific coatings.

6.31.2.6 Preparation Requirements

Work Site Preparation: Surfaces in area of painting shall be protected in order to prevent paint over-spray. All over-spray shall be removed upon completion of painting.

Clean and degrease the area with high pressure wash (HP is 3,000 to 5,000 psi).
Blast to SSPC SP-10 using Track or Sand blasting. Blast clean all surfaces where paint shall be applied.

Upon completion of blasting and before inspection of a blasted area, all grit shall be removed from the inspection area by blowing down with air or other means. Upon completion of inspection and acceptance of blasted area by the Owner (or Owner's Representative), and before paint application, all blasting media shall be removed from all surfaces.

If the blasted surface does oxidize before painting, the entire oxidized section should be re-blasted to SSPC SP-10.

Environmental Conditions: Particular attention shall be paid to the temperature and humidity conditions at the time of application. The Contractor shall not paint in wet, windy or high humidity weather unless the work is well protected from such conditions, and then, only with the approval of the Owner (or Owner's Representative) and the paint manufacturer's representative.

6.31.2.7 Paint Application

The non-skid paint is to be applied in the areas and pattern detailed by drawing 631-201. Non-skid should be applied in accordance with the paint manufacturer's instructions.

Deck and Line paint is to be applied in the areas and pattern detailed by drawing 631-201. Deck and line paint should be applied in accordance with the paint manufacturer's instructions.

Stencil Safety Aisle Red Lettering after line paint coat has dried a minimum of 24 hours in accordance with the paint manufacturer's instructions.

Some regions in drawing 631-201 are marked to show the non-skid and line paint overlapping. In these regions, the non-skid paint shall be applied first. The non-skid shall fully cure and harden. Then the line paint shall be applied over the non-skid.

Dry film thickness (DFT), where specified, is the minimum dry film thickness in mils.

Painting and inspections shall be conducted under adequate lighting conditions. Adequate lighting should preferably be daylight hours only. If daylight hours are not convenient or if daylight provides inadequate illumination, artificial lighting should be utilized. The artificial lighting should illuminate the work area well enough for workers to clearly and easily observe their environment and the progress of their work.

Prior to applying finish paint, the edges of the painting pattern should be clearly marked in a non-permanent manner. The finish paint should be applied within the areas marked by these temporary lines. Marking lines should be completely removed after the finish paint has completely cured and hardened.

Painting work, except touch up, shall be accomplished under the supervision of the paint manufacturer's representative during critical application steps including approval surface preparation, initial mixing and application of coating, and approval of minimum cure time between coats based on acceptable atmospheric conditions. Runs, overspray, roughness and signs of improper applications shall be repaired or recoated at the Contractor's expense.

6.31.3 Pushboat and Barge Ferry

The paint schemes for the Pushboat and others areas of the Barge Ferry shall be in accordance with Table 6.31-1 or another product with equivalent performance and compatibility approved by the Owner (or Owner's Representative). Surface preparation and paint application shall be in accordance with applicable requirements of sections II-6.31.1 and II-6.31.2 of this specification and the paint manufacturer's specifications.

Paint shall be applied so that the proper dry film thickness is achieved and so that runs, sags, and holidays are avoided.

Stainless steel, aluminum, plastic and glass surfaces shall generally not be painted.

Other than touch-up, painting is not required for electrical and electronic equipment, furniture, furnishings, machinery and items of outfit that are delivered with permanent factory coatings.

Selection of colors will be made by Owner (or Owner's Representative) during the construction period, no later than two months after beginning of construction.

Paints shall be applied in compliance with the manufacturer's recommendations. Prior to fabrication, all steel plates and shapes shall be blasted to the SSPC surface preparation recommended by the Paint manufacturer. All welds shall be chipped and wire brushed prior to painting.

Paint shall be applied to interior surfaces before attachment of the bulkhead and overhead insulation.

Preconstruction primer is to be applied immediately after initial surface preparation. See SSPC Guide 22.00 "Guide for Selecting One-Coat Preconstruction or Prefabrication Painting Systems".

The ice belt area coating application requires unique equipment and controlled mixing and application procedure. The Contractor shall obtain the services of the Paint Manufacturer's Representative during the ice belt coating critical application steps including, approval of surface preparation, initial mixing and application of coating, and approval of minimum cure time between coats based on acceptable atmospheric conditions.

For application of the paint schedule (Table 6-31.1) the following deck areas of the pushboat shall receive the non-skid deck coating:

- Main Deck forward of FR 24
- Upper Deck abaft FR 12
- Pilot House Flat fore and aft

PAINT SCHEDULE Table 631-1					
Location	**1st Coat**	**2nd Coat**	**3rd Coat**	**4th Coat**	**Remarks**
EXTERIOR - HULL					
Pushboat: Below 5'0" waterline (including rudders and the interior/grating of the sea chests) Barge Ferry: Below 2'0" waterline	One coat Intershield 300V, Bronze FC, 6-8 mils (DFT)	One coat Intershield 300V, Aluminum FC, 6-8 mils (DFT)	One coat Interspeed 640, BRA640, Black AF, 5 mils (DFT)	One coat, Interspeed 640, BRA642, Red AF, 5 mils (DFT)	Keel cooler pocket areas shall receive three (3) full AC coats. DO NOT PAINT KEEL COOLERS .
Pushboat: 5'0" waterline to Deck Barge Ferry: 2'0" waterline to deck	One coat Intershield 300V, Bronze FC, 6-8 mils (DFT)	One coat Intershield 300V, Aluminum FC, 6-8 mils (DFT)	One coat Interthane 990, Black FC, 2-3 mils (DFT)		
Ice Belt Areas	One Coat Intershield 163 Inerta 160 Black, FC, 36.0 mils (DFT)	One coat, Interspeed 640, BRA642, Red AF, 5 mils (DFT)	One coat Interspeed 640, BRA640, Black AF, 5 mils (DFT)		Use for Ice Belt Area (waterline +/- 6 to12 inches for Barge, 2.5ft WL to 5 ft WL for Pushboat) instead of above hull coatings AF Coating Optional
Draft Marks and Hull Markings	One coat Interlux Y5584, Shark White, 2 mils (DFT)	One coat Interlux Y5584, Shark White, 2 mils (DFT) **Note:** NOT Blue White			Coating system shall be applied in addition to, & over the top of the required completed coating system for the surrounding area.
Elsewhere above waterline, except decks	One coat Interzinc 52, Green, 2-3 mils (DFT)	One coat Intershield 300V, Bronze AC, 6-8 mils (DFT)	One coat Intershield 300V, Aluminum AC, 6-8 mils (DFT)	One coat Interthane 990, gloss finish 2-3 mils (DFT)	See Owner (or Owner's Representative) for color selection.
EXTERIOR HOUSE AND DECKS					
Exterior House, masts , deck machinery	One coat Intershield 300V, Bronze FC, 6-8 mils (DFT)	One coat Intershield 300V, Aluminum FC, 6-8 mils (DFT)	One coat Interthane 990, White 2-3 mils (DFT) (Alternate Colors with IDOT approval)		Includes all non-structural components. Handrail assemblies including upper and lower rails and stanchions, are to be painted Interthane 990,

PAINT SCHEDULE Table 631-1					
Location	**1st Coat**	**2nd Coat**	**3rd Coat**	**4th Coat**	**Remarks**
Vessel Name and Hailing Port	One coat Interthane 990, White, 2 -3mils (DFT)	One coat Interthane 990, White, 2-3 mils (DFT)			Coating system shall be applied in addition to, & over the top of the required completed coating system for the surrounding area.
Exterior Decks (Barge Car Deck)	One coat Intershield 300V, Bronze FC, 6-8 mils (DFT)	One coat Intershield 300V, with Non-Skid 7754D Aluminum FC, 6-8 mils (DFT)	One coat Interthane 990, Storm Grey 2-3 mils (DFT)		For Non Skid areas add International 7754D with 2nd Coat Intershield 300V
Exterior Decks (Pushboat))	One coat Intershield 300V, Bronze FC, 4 mils (DFT)	One coat Intershield 300V elastomeric Non-Skid , Grey FC, 125.0 mils (DFT)	One coat Intershield 6GV Dark Grey 35 mils (DFT)		For Non Skid areas add International 7754D with 2nd Coat Intershield 300V
TANKS, VOIDS, ENGINE ROOM BILGE					
Barge and Pushboat Voids; Engine room below grating level; Tank Exteriors	One coat Intershield 300V, Bronze FC, 6-8 mils (DFT)	Stripe coat welds, edges, cut-outs, penetrations Intershield 300V, Aluminum FC, 6-8 mils (DFT)	One coat Intershield 300V, Aluminum FC, 6-8 mils (DFT)	One coat Interthane 990, White 2-3 mils (DFT)	Use Interthane 990 Red for Engine Room Bilge areas
Petroleum Product Storage Tank Interiors (F.O., L.O)	Immediately after blasting and cleaning, spray complete interior surfaces with a non-volatile oil for the intended purpose				

1

PAINT SCHEDULE Table 631-1

Location	1st Coat	2nd Coat	3rd Coat	4th Coat	Remarks
INTERIOR SPACES					
All Areas behind Insulation	One coat Intershield 300V, Aluminum FC, 4 mils (DFT)				
Interior Pilothouse, Deckhand room, Engineroom, Gear Lockers (EXCEPT surfaces behind insulation)	One coat Intershield 300V, Bronze FC, 6-8 mils (DFT)	One coat Intershield 300V, Aluminum FC, 6-8 mils (DFT)	One coat Interthane 990, White 2-3 mils (DFT)		For the Pilothouse overheads and down six (6) inches around the perimeter, the 3rd coat shall be a non-reflective Black in color, to stop glare/reflection at night.
SAFETY MARKINGS AND NOTICES					
As defined in other Sections of the Technical Specification	1 base/prime coat as required for substrate	Unless otherwise specified: One coat Interthane 990, 2-3 mils (DFT), color as specified elsewhere; See remarks	Unless otherwise specified: One coat Interthane 990, 2 - 3mils (DFT), color as specified elsewhere		Specified colors shall be: Interthane 990, White Interthane 990, Black Interthane 990, Signal Yellow Interthane 990, Ensign Red Colors To Cover
MISCELLANEOUS APPLICATIONS					
Diesel Exhaust Piping up to 1004°F	Three 1 mil Coats Intertherm 50 3 mils (DFT)				Surface Prep SSPC-SP3 (Hand/Power Tool)
Anchor, bending shot, chain, and fittings	One coat Interzinc 52, Green, at 2-3 mils (DFT)	One coat Intertuf 262, Black, 6-8 mils (DFT)			
Galvanized surfaces throughout	One coat Formula 117 vinyl wash primer, not to exceed 0.3 mils (DFT)	One coat Intershield 300V, Aluminum AC, 6-8 mils (DFT)	Top coat of coating system required for specific area as set forth elsewhere in this TABLE and the Technical Specification (exposed to view surfaces only)		Galvanized. Sheetmetal Linings **not exposed to view** do not require coating except to touch up disturbed galvanizing.

1 Notes: FC =- Full Coat, AF- Anti Fouling, AC- Anti-Corrosive

6.34 Interior Deck Covering

Exposed surfaces of deck inside of Pilothouse and Deckhand Room shall be covered with Tuflex marine grade rubber flooring (marine@tuflex.com) or other commercial marine deck covering approved by the Owner (or Owner's Representative) and USCG-listed under 46 CFR 164.117. Immediately prior to application of the deck covering, the surface shall be abrasively cleaned to SSPC-SP 10 and primed with a coating approved by deck covering manufacturer.

The finished surface shall be level and faired smooth to the deck manholes and other protrusions in accordance with manufacturer's directions. Selection of color from among available color topping shall be made by the Owner (or Owner's Representative).

Safety treads of fabric having a pressure-sensitive adhesive backing and of dimensions approximately 24" x 12" shall be fixed to top of deck covering: one tread width just inside of each Pilothouse Void and Engine Room door and at top and bottom of stairs/ladders.

6.35 Bulkhead, Overhead Structural Insulation and Finished Linings

See drawing 621-101 details 1 through 4 for typical joinerwork insulation, finished sheathing and high pressure plastic (Formica or equal) interior linings that shall be applied to Pilothouse, Pilothouse Void, Deckhand Room and upper Engine Room, in order to meet heating and air conditioning load and acoustic sound absorption requirements.

The Pilothouse Void and the upper Engine Room bulkheads, sides of stairwell recess pockets and overheads shall be covered with faced Navy board at least 3" thick fitted between the stiffeners as shown in details 1 and 2 of drawing 621-101. Tape all seams, inside and outside corners with 4" wide insulation tape. The overhead of the Pilothouse Void shall also be covered with 12" fiber/acoustic tile (Armstrong, Rockwell or equal approved for commercial marine construction) set on a furring strip grid.

The Pilothouse and Deckhand Room shall be insulated with fiberglass at least 3-1/2" thick for outside corners and 3" thick for inside corners, covered with marine grade plywood backing and high pressure plastic (Formica or equal) as shown in drawing 621-101 details 2, 3, and 4. The Pilothouse and Deckhand Room overheads shall also be covered with fiber/acoustic tile set on a furring strip grid.

Interior Formica or equal interior linings shall be of the color and type approved by the Owner (or Owner's Representative).

6.52 First-Aid Kit

The Contractor shall provide and install a bulkhead mounted first-aid kit in the Pushboat Deckhand Room.

6.61 Pilothouse Furnishings

The Pilothouse shall be arranged and furnished generally as shown in drawing 621-102.

The Pilothouse control console and chart table/cabinet shall be constructed of unitized aluminum, steel or brushed stainless steel. They shall be free-standing and rigidly constructed with all necessary internal stiffeners and supports. Aluminum or steel construction shall have exterior surfaces painted with a polyurethane electrostatic powder coating finish of a color approved by the Owner (or Owner's Representative). Stainless steel construction shall not be painted, but shall have the exterior surfaces brushed to provide a mat finish.

`External surfaces shall have fully radiused edges and corners. Provide mahogany or teak wood trim on the Pilothouse control console or similar approved by the Owner (or Owner's Representative). Sand the wood smooth, seal and finish with two (2) coats of a high quality, satin finish, exterior grade marine spar varnish.

Exposed surface finishes of cabinets shall be as follows:

- For metal cabinet tops: plastic laminate (micarta or similar)
- For metal surfaces elsewhere: enamel paint or plastic laminate
- For wood cabinet tops: plastic laminate (micarta or similar)
- For wood surfaces elsewhere: plastic laminate or varnish/stain combination

Colors and finish shall be approved by the Owner (or Owner's Representative) from selections proposed by Contractor.

The Pilothouse control console shall be constructed with removable access panel(s) in the vertical surfaces of the cabinet to permit future maintenance and modification to the cables within.

The top surface of the Pilothouse control console shall have a large hinged panel which will give access to the electrical gear within the cabinets. A removal access to the space within this cabinet shall be provided through an exterior louvered panel, in the aft center as shown on drawing 621-102 to provide adequate air flow for the window defroster unit and allow removal for maintenance.

The Pilothouse control console shall be arranged for standing operators, with its height limited to allow full vision over the consoles. Provide built-in internal supports and divisions to separate window defrosting system from other electronic components, control wiring and terminal boxes. Colors and finish shall be approved by the Owner (or Owner's Representative) from selections proposed by Contractor.

6.73 Deckhand Room Furnishings

The Pushboat Deckhand Room furnishings shall be provided as shown on drawing 621-101. The Contractor shall provide the following: Four sets of two tier lockers 12 inch x 12 inch mounted on aft BHD; Counter top w/cabinet, microwave with mounting shelf and 30"x30" table and two chairs. Table legs shall be fixed to the deck with bolted connections and brackets.

6.74 Utility Shelving

Approximately three to five shelves shall be installed in the Engine Room and Pilothouse Void for stowage of stores, spare parts, tools, and Owner furnished equipment in general. Framework shall be constructed of steel, with steel or wood shelves. Total shelf area should be approximately 40 to 80 square feet. Vertical spacing between shelves shall be at least 12 inches.

Section 7 - Owner Furnished Material

Two (2) State radios will be provided by the Owner for installation by the Contractor into the new Pushboat. These items will be delivered by the Owner to the construction site, or to another location as agreed upon by Owner and Contractor.

Section 8 – Testing

8.01 Structural
All watertight subdivision of the hulls shall be hydrostatically tested, hose tested with water, or hose tested with compressed air, to the satisfaction of the USCG inspector and the Owner (or Owner's Representative).

The Pilothouse, upper Engine Room s, and Deckhand Room boundaries shall all be hose tested from the exterior while conducting a thorough visual inspection from within.

8.02 Propulsion and Auxiliary Machinery
The propulsion equipment shall be checked for proper operation and to insure that it conforms to this specification. Propulsion controls shall be tested to ensure required operation in all positions. All indicator lights, gauges, meters, and alarms shall be checked for proper function.

8.03 Electrical Systems Operational Tests
The electric plant shall be tested. The operation of each AC and DC load shall be checked. Navigation lights shall be checked at night to ensure that they do not produce stray light or glare. All indicator lights, meters, and alarms shall be checked for proper function. The Pilothouse and Deckhand Room electric heaters shall be tested to ensure that surrounding materials do not become excessively hot and that control thermostat operates properly.

Test all electrical systems to show conformance with design and performance requirements of the individual sections of this specification.

Fully demonstrate the operation of all installed electrical machinery, equipment, components, controls, indicators, instruments, lighting, and communications systems.

Check each electrical device while under normal operational load and record observations. Check each switch indicator lamp and control device for its proper function.

Test each alarm system by simulating a malfunction of the circuits monitored by means of direct actuation of each sensor. ***No "destructive test" shall be performed***.

Prepare Test Memoranda covering installation and operational tests using the following Subsections as a guide.

Failure of this specification to enumerate in detail all of the operational tests that may be required to fulfill the intent of the specification does not relieve the Contractor of its responsibility to prove the integrity, functionality, and operational performance of each installed equipment, component, or system.

Operational tests shall include demonstrations of, but are not limited to, the following:

8.03.1 Cable Insulation Resistance
Before the ship's service power, is scheduled for an operational test, insulation resistance measurements (meggering) shall be performed on each new cable operating at more than 12 volts.

Unless directed differently in specific sections of this specification, use a 500 volt "Megger" for circuits of 100 volts or greater and a 50 volt "Megger" for circuits of less than 100 volts.

Measure the insulation resistance of each circuit between conductors and between each conductor and ground. Disconnect the neutral from ground for the tests. Minimum acceptable insulation resistance values shall be as defined in IEEE Standard 45, Clause 34.1 for all cabling, and shall be 10 megohms minimum for all cabling.

NOTE: Circuits containing appliances or solid state devices which have a voltage rating less than the test voltage shall have those items protected by physical disconnection at the appliance or device.

Lighting circuits which utilize fluorescent fixtures shall have the ballasts disconnected during the insulation resistance test.

The Contractor shall prepare an Insulation Resistance Test Report, which shall provide the following information:

- circuit identification
- measured resistance value (corrected to 25C degrees)
- date when circuit was checked
- name of person(s) performing test

Submit three (3) copies of all Insulation Resistance Test Reports to the Owner (or Owner's Representative) prior to delivery of the Ferry.

8.03.2 Circuit Continuity Checks

Circuit continuity checks shall be performed on all electrical circuits throughout the entire electrical installation, including but not limited to, power, lighting, interior communications, controls, alarms and electronic systems. This shall be a prerequisite to any system being scheduled for an operational test. The Contractor shall prepare a Circuit Continuity Test Report which shall provide the following information:

- Circuit origin and destination
- Date that circuit was checked
- Name of person(s) performing the checks
- Agreement with drawings (i.e., cable numbers and wire identification floaters)

Three (3) copies of the Circuit Continuity Test Reports shall be submitted to the Owner (or Owner's Representative) prior to delivery of the Ferry.

8.03.3 Motors and Controllers

Test all motor-driven equipment 1/2 horsepower and larger under normal operating load conditions. Motors include: two (2) air conditioners, one (1) engine room fan motor, and one (1) air compressor motor. Record hot and cold insulation resistance readings, operating volts, and amps for each motor. Check each operating pushbutton, selector switch, pilot light, remote pushbutton, pressure switch, and other control devices to assure proper operation. Check that overload tripping devices are properly matched to the motor.

8.03.4 Lighting

1. ***At night***, turn on all lighting throughout the Pushboat and Barge Ferry and observe the general lighting level in the various areas and spaces. Demonstrate correct operation of each switching circuit.

2. ***At night***, turn off all normal lighting and verify that the emergency lights illuminate egress routes, operating areas, and vital machinery.
3. ***At night***, operate the Pushboat floodlights and verify that they are aimed properly to illuminate the aft area of the boat.
4. ***At night***, demonstrate proper operation of both searchlights.
5. ***At night***, demonstrate proper operation of all navigation lights on both the Barge Ferry and Pushboat. Ensure that they do not produce stray light or glare that would interfere with the helmsman's field of vision. Verify that the toggle switch in the Pushboat Pilothouse changes the navigation lights on the Barge Ferry as shown on drawing 422-201.
6. ***At night***, demonstrate proper operation the Barge Ferry deck lights (both sides). Verify that the lights are controlled from the Pilothouse switches.

Note: In order to accomplish items 5 and 6, the Pushboat and Barge Ferry must be coupled.

8.03.5 Radio Equipment
In conjunction with the IDOT radio technician, demonstrate proper operation of all radio systems.

8.03.6 Control and Communication Systems
Demonstrate proper operation of all control and communications systems, including but not limited to, the following:

- Diesel Generator Set Control and Alarms
- Fire Detection Alarm and Monitoring System
- Main Propulsion Machinery Control and Alarm System
- Loudhailer system
-

8.03.7 Batteries and Battery Charger
Check each battery for secure mounting and proper ventilation. Ensure that no part of any battery touches any conductive part of the battery rack. Demonstrate proper operation of the battery charger or power supply capability to recharge the battery in the specified time. Perform this test by first performing an equalizing charge on the batteries, then discharging the batteries to the low limit of either minimum voltage or minimum electrolyte specific gravity in accordance with manufacturer's requirements, then engaging the battery charger with normal load. Check charge (specific gravity) hourly, until full charge is achieved.

Record specific gravity readings of all cells during discharge and charging. Defective cells shall be replaced. Cells that prevent the battery from meeting any required ampacity and duration shall be replaced.

Verify all indications, alarms, interlocks and safety features associated with battery systems.

8.03.8 Distribution Panel Testing
Verify that all installed systems operate as intended. This includes all system components, all safety devices, and all alarm, monitoring, and control devices.

Prepare Test Memoranda covering installation and operational tests using the following as a guide:

1. Conduct insulation resistance and continuity checks for all distribution panel cabling in accordance with the *Cable Insulation Resistance* and *Circuit Continuity Checks* Subsections in this specification.
2. The installation/operational testing of distribution panels shall include, but not be limited to, the following:

Visual Inspections
- Verify that the distribution panel hook-ups are in accordance with the Technical Specification and Drawings.
- Check bonding (grounding) of equipment and components.
- Check availability and marking of components in accordance with the relevant Drawings.
- Verify the wire size and wire markers of all installed wires and cables.
- Check all distribution panel connections for proper fasteners and tightening.

Insulation Tests
- Measuring of clearance and creepage distance of all installed wires and cables.
- Dielectric test of 120/240 vac circuits.
- Measurement of insulation resistance of all installed wires and cables.

Functional Tests
- Functional test of alarm and monitoring sensors installed in distribution panels.
- Functional test of the 120 and 240 vac circuits.

All electrical distribution panel tests shall be conducted **prior** to Dock Trials.

8.04 Instrumentation and Alarm Systems

8.04.1 Instrumentation, Alarm and Monitoring System
The installation/operational tests of Instrumentation, Alarms and Monitoring System shall include, but not be limited to, the following:

Visual Inspections
- Verify that the Instrumentation, Alarms and Monitoring System installation hook-up is in accordance with this specification and equipment manufacturer's requirements.
- Inspect bonding (grounding).
- Check the availability and marking of components in accordance with the relevant drawings.
- Verify wire size and the accuracy of the wire markers of all installed wires and cables.

Insulation Tests
- Inspect clearance and creepage distance of all installed wires and cables.
- Measure insulation resistance of all installed wires and cables.

Functional Tests
- The functional test of the Instrumentation, Alarm and Monitoring System shall be documented in an Integrated List of Control Components to be tested. Where components are part of a specific machinery test, the integrated list shall identify related test procedures.

8.04.2 Fire Alarm and Detection System

The installation/operational tests of the smoke and alarm systems shall include, but not be limited to, the following:

Visual Inspections

- Verify that the fire alarm system installation hook-up is in accordance with the Technical Specification.
- Check the availability and marking of components in accordance with the relevant drawings.
- Verify wire size and the accuracy of the wire markers of all installed wires and cables.

Insulation Tests

- Measuring of clearance and creepage distance of all installed wires and cables.
- Measurement of insulation resistance of all installed wires and cables.
-

Functional Tests

- The functional test of the fire alarm systems shall:
- Demonstrate the full function of the system to meet the requirements of the system design.
- Be conducted and certified by the fire alarm system supplier and a Registered Professional Engineer or recognized classification society in accordance with 46 CFR 27.203(g).

The fire alarm systems tests shall be satisfactorily conducted **prior** to Dock Trials.

8.05 Auxiliary Systems and Miscellaneous Tests

All piping which, in service, will convey liquids shall be hydrostatically tested at a pressure identified on the drawings or as directed by the Owner (or Owner's Representative). This includes the firemain/bilge system, the hydraulic steering system, the engine cooling system, and the fuel system.

Operational testing shall be performed for all machinery, piping and electrical system.

Perform an operating test on each of the following equipments and verify that the equipment operates in accordance with the manufacturer's specifications and the functional requirements expected of the equipment.

- Defrosters
- Windshield wipers
- Air conditioners and Heaters

The Steering Hydraulic system shall be thoroughly tested. Included in the dock trials shall be a 60-minute test run of each steering pump, with the system at no load (i.e. pump at zero stroke) for a period of at least 55 minutes, and with the stroke adjusted to produce some load during five minutes. The system shall be demonstrated to not overheat during this trial. Following dock trials, a hydraulic fluid sample shall be drawn from the hydraulic reservoir testing. The hydraulic fluid sample shall be laboratory tested for contaminants: the material and quantity (level) of contaminants shall be analyzed. Copies of the laboratory test report shall be provided to the Owner (or Owner's Representative). Level of fluid cleanliness shall be demonstrated to meet the standards specified by machinery manufacturer prior to acceptance of the vessel.

8.06 Dockside Trials

The dockside trials shall include demonstration of the Pushboat and Barge Ferry mechanical and electrical systems while moored pierside. The dockside trials will include as a minimum the following system operational tests:

- Main engine/Reduction Gear/Propulsion shaft operation (low power/rpm)
- Pushboat and Barge Ferry Fire and Bilge Pump and Firemain and Bilge pumping system operation
- Steering pump and System operation in all modes, See section II-8.05 of this specification for additional requirements.
- Communication systems, loud hailer and alarms testing, pilothouse console
- Diesel Generator Testing , initial trend analysis with at least 60% load
- Electrical distribution
- Fuel systems, duplex Filters, supply and return, TLI
- Compressed Air system – Pushboat and Barge Ferry
- Main Engine Starting Air and DG Battery Start
- Battery Charging and 12 Vdc distribution system
- Tow Linkage connection and latches
- Interior lighting, Deck and Navigation lighting
- Ship's Whistle
- Demonstration of releasing and dropping the anchor while it is attached to the anchor rode. The anchor must be recovered following each test drop and returned to its stowage location using the anchor winch.
- Firefighting equipment and Life Saving Equipment validation.
- Conduct noise level survey in various locations on the open deck and inside the Pilothouse and verify that noise level is not excessive per requirements identified in section I-18 of this specification.

8.07 Acceptance Underway Trials

After successful completion of Dockside Testing and optional Builder's Trials, the Contractor will conduct Final Acceptance Underway Trials for the Pushboat and Barge Ferry. The Underway Trials must be conducted at the Brussels Ferry in the presence of the Owner and/or Owner's Representative. It will be the responsibility of the contractor to schedule a time mutually agreeable between the contractor and the owner and/or Owner's Representative. The Underway Trials will be conducted in two phases during a 2-4 hour underway test and evaluation period. During the first phase the Pushboat will be demonstrated for performance and adequacy for underway operation. During the second phase the Pushboat and Barge Ferry will be demonstrated for performance and adequacy for Ferry operations and meets the Contract specifications. The Contractor shall provide an Underway Acceptance Trial Event Schedule and Test Agenda which includes all final Underway Tests that will be conducted, data forms and schedule to IDOT for approval in advance of the trials. The Contractor will coordinate the trials and arrange for data takers, Owner (or Owner's Representative) and USCG OCMI to witness Ferry operations to support Initial COI in accordance with 46 CFR Subchapter T Part 176, document design data and verify acceptable Ferry performance. Operations and design verification testing that needs to be performed while the vessel is underway shall included the following:

Phase 1 Pushboat Underway Trials: (approximately 2 hours)

- Speed-Power, Propulsion Controls, fuel consumption measurement
- Achieve Full Power Ahead, Endurance Test
- Achieve Astern Full Power, Crash back, Endurance Test
- Ahead and Astern Steering and maneuverability tests (run tests with port steering pump only, run tests again the starboard steering pump only)
- Diesel Generator endurance validation
- Communications equipment and navigation validation
- Main Engine, Reduction Gear, Propulsion shaft seals, couplings and stern tube bearings operation
- Fire/Bilge Pump Clutch operation at full power and reduced power

Phase 2 Ferry Underway Trials: (approximately 2 hours)

- Speed-Power measurement , fuel consumption
- Achieve Full Power Ahead, Endurance Test
- Achieve Astern Full Power, Crash back, Endurance Test
- Ahead and Astern Steering and maneuverability tests
- Diesel Generator endurance and Electrical distribution system validation
- Communications equipment and navigation validation
- Tow Connection and Latch operation validation
- Vehicle Ramp/Safety Barrier operation during Ferry landing demonstration
- Barge Ferry Fire/Bilge Pump demonstration
- Navigation Lights Operation Validations
- Release and Recovery of Barge Ferry anchor

Underway trials include testing of all machinery, and all mechanical, piping and electrical systems. Conduct noise level measurements in various locations on the open deck and also inside of the pilothouse during the Phase 2 Underway trials.

An endurance run of at least two hours ahead and 15 minutes astern duration shall be conducted for Pushboat Phase 1 test and 1 hour ahead and 10 minutes astern for the Phase 2 combination Ferry Underway Trial. The total time expected to conduct the Acceptance Underway Trials is approximately 4 hours.

The Pushboat and Barge Ferry shall be subjected to crash stops from full speed in each direction to full power in the opposite direction. The time and distance taken to bring the ferry to a stop shall be recorded. Crash stops from ahead shall be conducted by reversing the rotation of the propellers while proceeding at full speed ahead with the Pushboat aligned and latched to the Barge Ferry. Additional crash stops shall be conducted from full power astern to full speed ahead, also with the Pushboat aligned and latched to the Barge Ferry.

PART III – BASIS OF PAYMENT

This work will be paid for at the contract unit price per each for BARGE FERRY and PUSHBOAT.

The Department has contracted services with the following engineer firm, Owner's Representative, for ten (10) on site inspections of the Barge Ferry and Pushboat construction and testing:

Art Anderson Associates
202 Pacific Avenue, Bremerton, WA 98337
(360) 479-5600

After each on site inspection, the Owner's Representative will submit a progress estimate to the Department for these pay items which will be used for pay estimates. The contractor will only receive payment for these pay items based on the progress estimates from the Owner's Representative. The final 15% of each pay item will not be paid until the Barge Ferry and Pushboat have been final accepted by the Department

BARGE FERRY AND PUSHBOAT DELIVERY

The Ferry shall be delivered to the owner at the Brussels ferry site on the Illinois River. Alternate delivery and acceptance options can be negotiated with IDOT depending on location of construction facility. The Ferry shall be delivered ready for service, with all compartments thoroughly cleaned, all debris and Contractor's equipment removed, all machinery in operating condition, with operation fluids in the propulsion and auxiliary machinery systems filled to the proper operating level.

At or before the time of delivery, the Contractor shall supply the Owner with all documents, drawings, manuals, spare parts as required by the contract. Spare parts shall be procured for the following major equipment, main engines, steering system HPU and controls, and generator based on manufacturer recommendations.

This work will be paid for at the contract unit price per each for BARGE FERRY DELIVERY and PUSHBOAT DELIVERY.

SURPLUS BARGE AND PUSHBOAT

1. General

Existing barge ferries and pushboat identified in this part of the specification are inactive and no longer in service. They have been surplused by IDOT. Requirements of the Contractor regarding disposition of these vessels are set forth below.

NOTE: The Contractor MUST take possession of these vessels. Bidders who qualify their bid to exclude taking possession of these vessels will be considered NON-RESPONSIVE.

2. Description and Condition of Vessels

2.1 M/V Brussels II

Length	47.7 feet
Breadth	11.5 feet
Depth	4.2 feet
Main engines	2x Detroit Diesel 4-71
Generator	ONAN Diesel, 6 kW, 25 Amp (serial number A790388516)

M/V *Brussels II* is afloat at the Brussels, IL ferry landing. All diesel engines are in running condition, although the generator diesel has not been run in a while.

IDOT is unaware of any hazardous materials on board M/V *Brussels II*.

2.2 Barge 10

Length	85.0 feet
Breadth	30.0 feet
Depth	3.6 feet

Barge 10 is afloat at the Kampsville, IL ferry landing. *Barge 10* does not have a current USCG Certificate of Inspection.

Barge 10 has coatings containing lead.

2.3 Barge 11

Length	85.0 feet
Breadth	30.0 feet
Depth	3.6 feet

Barge 11 is afloat at the Brussels, IL ferry landing. *Barge 11* holds a current USCG Certificate of Inspection.

Barge 11 has coatings containing lead.

3. Pre-Bid Survey

Prospective bidders may visit and/or survey any, or all, of these vessels during the bidding period Monday through Friday during the hours from 8:00 am to 3:00 pm. Arrangements for the visit and/or survey can be made with:

Rick Watters
Ferry Supervisor
Illinois Department of Transportation

Kampsville Ferry	or	Brussels Ferry
PO Box 182		16211 State Highway 100 West
Kampsville, IL 62053		Grafton, IL 62037
Phone: (618) 653-4518		Phone: (618) 786-3636

4. Disposition Requirements

The Contractor must take possession of each vessel in its found material condition ("as is") at its mooring ("where is") at the Brussels, IL or Kampsville, IL ferry landing. Upon taking possession the Contractor must remove the vessel from its mooring using Contractor furnished equipment. All fees, labor cost, and other costs associated with removal of the vessels shall be at the Contractor's expense.

At the time of taking possession of the vessel IDOT will transfer ownership to the Contractor. All costs associated with transfer of ownership shall be at the Contractor's expense.

After transfer of ownership and taking possession of the vessel, the vessel becomes the Contractor's property.

5. Schedule

The Contractor must take possession of *Barge 10* and *Barge 11* no later than 30 calendar days after contract execution.

The Contractor must take possession of M/V *Brussels II* not earlier than final acceptance of the new Pushboat and Barge Ferry and no later than 30 calendar days after final acceptance of the new Pushboat and Barge Ferry.

6. Basis of payment

This work will be paid for at the contract unit price per each for SURPLUS BARGE and SURPLUS PUSHBOAT.

ON SITE INSPECTIONS

The Department has contracted services with the following engineer firm, Owner's Representative, for on-site inspections of the Barge Ferry and Pushboat construction and testing:

Art Anderson Associates
202 Pacific Avenue, Bremerton, WA 98337
(360) 479-5600

The Contractor, all subcontractors, fabricators and/or other entity associated with this contract shall allow personnel from the Department and/or Owner's Representative on site to inspect and monitor the construction and testing of the Barge Ferry, Pushboat, and appurtenances.

MONTHLY LABOR SUMMARY AND ACTIVITY REPORTING SYSTEM

Effective: 1-1-1995 Revised June 2001

I. Monthly Labor Summary Report, Form SBE 148

The prime contractor and each first and second tier sub-contractor, (hereinafter referred to as "subcontractor") shall submit a certified Monthly Labor Summary Report directly to the District Engineer.

This report is in lieu of submittal of the Monthly Workforce Analysis Report, Form SBE 956.

This report must be received in District Eight no later than the tenth day of the next month.

This Report shall be submitted by the prime contractor and each subcontractor, for each consecutive month, from the start, to the completion of their work on the contract.

The data source for this Report will be a summation of all personnel and hours worked on each subject contract for the month based on weekly payrolls for that month.

The Monthly Labor Summary Report is required to be submitted in one of the following formats:

a.) For contractors having IDOT contracts valued in the aggregate at $250,000 or less, the report may be typed or clearly handwritten using Form SBE 148 for submittal to the District Engineer for District Eight.

b.) For contractors having IDOT contracts valued in the aggregate at more than $250,000, the report must be submitted in a specific "Fixed Length Comma Delimited ASCII Text File Format". The subject file format is detailed on the next page. Submittal of this file may be by 3.5 inch disk, modem, or by e-mail.

II. Monthly Contract Activity Report, Form SBE 248

The prime contractor and each subcontractor shall submit a monthly report directly to the District Engineer reflecting their contract activity on all Illinois Department of Transportation contracts they have in force in District Eight.

This report shall be submitted for each consecutive month, from the start, to the completion of all contracts in District Eight.

The report must be received in the District Office no later than the tenth day of the next month.

Monthly Labor Summary and Activity Reporting System Codes and Formats

Indicated below for your reference are the Employee Codes and File Formats required for this system.

I.) Monthly Labor Summary Report, Form SBE 148

The following employee codes are to be used to identify each individual on the Summary Report:

1. **Gender:** **M** - Male **F** - Female

2. **Ethnic Group**: **1** - White **2** - Black **3** - Hispanic
4 - American Indian/Alaskan Native **5** - Asian/Pacific Islander

3. **Work Classification**: **OF** - Official **SU** - Supervisor **FO** - Foremen
CL - Clerical **CA** - Carpenter **EO** – Operator **ME** - Mechanic
TD - Truck Driver **IW** - Ironworker **PA** - Painter **OT** - Other
EL - Electrician **PP** - Pipefitter **TE** – Technical **LA** – Laborer
CM - Cement Mason

4. **Employee Status**: **O** - Owner Operator **J** - Journeyman
C - Company **A** – Apprentice **T** - Trainee

Specific "Fixed Length Comma Delimited ASCII File Format"

Order	Field Name	Type	Size
1	Contractor Number	A	4
2	Contractor Reference Number	A	6
3	Contract Number	A	5
4	Period (07/28/2000)	D	10
5	SSN (111-11-1111)	A	11
6	Name	A	40
7	Gender	A	1
8	Ethnic Group	A	1
9	Work Classification	A	1
10	Employee Status	A	1
11	Total Hours (0000060.00)	N	10

File Name Conventions: (Contractor Number + Report Month/Year).Txt
i.e. 20001298.Txt

II.) Monthly Contract Activity Report, Form SBE 248

The following activity codes are to be used to identify the contractor's contract status each month on the Monthly Activity Report, Form SBE 248:

A. Contract Status: 1 - Not Started 2 - Active 3 - No Work
4 - Suspended 5 - Complete

Failure to comply with this special provision may result in the withholding of payments to the contractor, and/or cancellation, termination, or suspension of the contract in whole or part.

Compliance with this Special Provision shall be considered incidental to the cost of the contract and no additional compensation will be allowed for any costs incurred.

All prime and subcontractors having contracts in the aggregate exceeding $250,000 must provide a "Fixed Length Comma Delimited ASCII File" for approval prior to the start of construction.

This Special Provision must be included in each subcontract agreement.

The Department of Transportation is requesting disclosure of information necessary to accomplish the statutory purpose as outlined under 23CFR part 230 and 41CFR part 60.4 and the Illinois Human Rights Act. Disclosure of this information is REQUIRED. Failure to comply with this special provision may result in the withholding of payments to the contractor, and/or cancellation, termination, or suspension of the contract in whole or part.

Compliance with this Special Provision shall be considered incidental to the cost of the contract and no additional compensation will be allowed for any costs incurred.

This Special Provision must be included in each subcontract agreement.

BID-ALTERNATIVE 1

INTENT

The intent of this Bid Alternative 1 specification, together with the accompanying Bid Alt 1 contract guidance drawings is to show the design for installing alternative main propulsion engines in the Pushboat.

> **Note: This Bid Alternative 1 specification contains only sections applicable to the alternative main propulsion engine installation. All other requirements, features, and installations for the new Barge Ferry and Pushboat are included in the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification. The NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification governs for any section NOT explicitly included in this Bid Alternate 1 specification.**

PART I – BASIC CHARACTERISTICS AND GENERAL PROVISIONS

3. Principal Dimensions and Characteristics

3.2 Pushboat

Length over deck	60'-0"
Length between headlogs (molded)	60'-0"
Beam, molded	18 ft
Beam, overall	18’-3/4”
Depth (molded)	7'-6"
Lightship weight (preliminary)	65.5 LT
Displacement, full load (estimated)	80.6 LT
Draft, full load (mean molded)	4.52’
Draft, max navigational	5.5’
Propulsion power: Marine Diesel Engine	2 x 325 = 650 HP
Service speed	10 MPH = 8.7 knots
Passenger capacity	0
Crew	1 Master
Gross tonnage (optional simplified method 46 CFR 69.05)	68 GRT approx.

9. Contractual Technical Documents

The following contract guidance drawings are furnished in conjunction with this Bid Alternate 1 specification, and together with this Bid Alternate 1 specification and NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification and drawings not covered here, constitute the technical portion of the Contract Documents should Bid Alternate 1 be awarded.

9.2 Contract Guidance Drawings

PUSHBOAT DRAWINGS

Dwg No	Drawing Title
Bid Alt 1 801-101	GENERAL ARRANGEMENT – PUSHBOAT
Bid Alt 1 111-101	SHELL PLATING AND FRAMING - PUSHBOAT
Bid Alt 1 117-104	TRANSVERSE FRAMING - FR 13 TO 16
Bid Alt 1 117-105	TRANSVERSE FRAMING - FR 17 TO 20
Bid Alt 1 233-101	MACHINERY ARRANGEMENT - PLANS
Bid Alt 1 233-102	MACHINERY ARRANGEMENT - SECTIONS AND ELEVATIONS
Bid Alt 1 243-101	PROPELLER SHAFTING AND SUPPORT
Bid Alt 1 256-101	MACHINERY COOLING SYSTEM PIPING – DIAGRAM
Bid Alt 1 256-102	MACHINERY COOLING SYSTEM PIPING – DETAILS
Bid Alt 1 259-101	ENGINE EXHAUST PIPING
Bid Alt 1 512-102	HVAC ARRANGEMENT AND DETAILS –ENGINE ROOM
Bid Alt 1 541-101	DIESEL FUEL PIPING - DIAGRAM

The contract guidance drawings illustrate an acceptable design, from which the Contractor may deviate, with the written approval of the Owner (or Owner's Representative). In the event that the Contractor does deviate from a contract guidance drawing, then the Contractor shall prepare an "as built" drawing showing the features as they are actually built. The supplemental vendor's drawings are for reference in providing mounting, piping and wiring connections for machinery.

This written Bid Alternate 1 specification and the drawings enumerated above are intended to complement each other. Anything shown on the drawings and not in the specification shall be deemed to be included in both. In the event that the contract guidance drawings and the specification contradict each other on any point, it shall be the Contractor's responsibility to confirm the actual intent by contacting the Owner (or Owner's Representative).

PART II - TECHNICAL SPECIFICATIONS

Section 1 – Structural

1.02 Introduction

The second paragraph of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification shall be replaced with the following.

"The Pushboat shall be constructed to the General Arrangement as shown in drawing Bid Alt 1 801-101 and Lines and Offsets provided in drawing 839-101."

Section 2 - Propulsion Machinery

2.01 General

The propulsion machinery for the Ferry is provided entirely by the Pushboat. All propulsion machinery, support equipment and materials required for installation and testing shall be provided by the Contractor. The Contractor shall obtain technical support services from the major propulsion machinery manufacturer's representative when necessary to support installation, system integration and testing.

The Pushboat propulsion drive train shall include the following equipment:

- Two Marine Propulsion Diesel Engines: John Deere PowerTech 9.0 L, 6090AFM75 (Keel Cooled)
- Two Marine Clutched/Reversing Reduction Gears: Twin Disc MG-5091 DC (Deep Case); R.H; 4.5:1 Ratio drawing 1002155, with Hydraulic Clutched SAE C PTO XA7554A
- Two Shaft Couplings: Twin Disc Model XA6988A; Companion Flange Assembly to Reduction Gear
- Two Propeller Shafts with Duramax Marine stuffing box and water lubricated stern tube and strut support bearings. Contract Guidance drawing 243-102
- Two MARIN Type 37 Kort Nozzles with KA 4.70 Kaplan Propellers
- Electronic Propulsion Control System – Twin Disc Model EC300 Power Commander.

All propulsion machinery shall be installed in accordance with this Bid Alternate 1 specification, equipment manufacturer/provider instructions, and the following arrangement and detail drawings:

- Bid Alt 1 233-101; MACHINERY ARRANGEMENT - PLANS
- Bid Alt 1 233-102; MACHINERY ARRANGEMENT - SECTIONS AND ELEVATION
- Bid Alt 1 243-101; PROPELLER SHAFTING AND SUPPORT
- 243-102; PROPELLER SHAFTING AND SUPPORT DETAILS
- Bid Alt 1 256-101; MACHINERY COOLING SYSTEM PIPING – DIAGRAM
- Bid Alt 1 256-102; MACHINERY COOLING SYSTEM PIPING – DETAILS
- Bid Alt 1 259-101; ENGINE EXHAUST PIPING
- 259-102; ENGINE EXHAUST PIPING DETAILS

The installation of the main engines and ancillary systems shall comply with all applicable original equipment manufacturer (OEM) installation and Authoritative Agency requirements as defined in Sections I-2 and I-8 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification.

All areas or parts that require service, replacement, or periodic maintenance will be readily available and have free access to do the work required.

2.01.3 Testing, Trials and Inspections

Tests and trials shall be provided in accordance with this section, and section II-8 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification.

2.33 Main Propulsion Diesel Engines (Pushboat)

The Contractor shall provide two John Deere Model 6090AFM75 marine propulsion diesel engines with the following ratings and configuration options:

- Rating: M2 -325HP (242kW) @ 2200 RPM
- Rotation: CCW (facing flywheel, right-hand engines)
- Emissions Certified EPA Tier II or better Emissions Rating; Provided with Emissions label
- Engine Data: 6 Cylinder, 9.0 Liter Total Displacement (549 cu in.), in-Line, 4-cycle
- Keel Cooled
- Aspiration: Turbocharged and after cooled
- Air Cleaners: John Deere Option 1802_RE542414
- Dry exhaust elbow Gaskets (one per engine). John Deere P/N T151881
- Water-cooled Turbocharger and Exhaust Manifold
- SAE 1 Flywheel Housing; Flywheel No.14 SAE J620d
- Air Starter – TDI Turbine Inertia Air Starter or equal, mounting flange to engine (specify with engine procurement); model selection in accordance with manufacturer's recommendation
- Alternator 12 Volt, 140 AMP, belt driven
- Engine Block Heater (cold weather coolant heater)- 240Volt A.C. – if block heater is available as factory-installed option
- Local (Engine Room) and Remote (Pilothouse) Instrument/Start/Diagnostic Monitoring Display Panels PowerViewTM or equal.
- Engine Foundation Mount Option 9701 - Front Support Kit RE57814
- Left Hand Auxiliary Gear Drive - John Deere option no. 5203 (Dwg. No.RE527359) shall be provided for the Port main engine, installed by engine manufacturer. The engine auxiliary gear drive shall have a front facing SAE A two bolt mount with standard 9 tooth 16/32 pitch spline and aft facing SAE B two bolt mount, 13 tooth, 16/32 pitch spline.

The Port main engine auxiliary drive will be used to drive the Pushboat belt driven Fire/Bilge pump which is clutched with a manually actuated clutch. See section II-5.21 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification for additional requirements.

The Starboard main engine shall be provided with a Midland 1300 CFM air compressor (RE62417/RE67122; John Deere Option 7813 or equal), Air Compressor Governor with plugs kit RE70072/RE505125), and auxiliary drive (Option 5214 or equal). The Air compressor will be mounted on the STBD main engine rear facing SAE B mount to provide a backup air compressor capability. The Contractor shall procure this option either as a factory-installed option, if available; otherwise installed by engine distributor. See section II-5.51 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification for additional requirements.

The Contractor shall take responsibility for conducting a torsional vibration analysis and providing a report of the analysis specific to the propulsion drive train of the pushboat. This shall be done to ensure compatibility of components (engine, gear, shafting, propeller).

The result of the torsional vibration analysis may lead to a rational selection of torsionally flexible coupling; or it may reveal that there is no need for such a coupling.

2.33.1 Installation

On receipt of marine propulsion diesel engines from the vender, the Contractor shall conduct a thorough inspection with the Owner (or Owner's Representative), to identify and document any visible exterior damage to components. The units shall then be stored indoors and adequately protected from weather, damage, and deterioration in a heated, dry storage facility until such time as the units can be installed on board. Once installed on board, all equipment shall be adequately protected from physical damage and adverse environment.

See section II-2.41.3 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification for engine mounting and alignment requirements.

See section 2.52 of this Bid Alternate 1 specification for additional propulsion control system requirements.

See section 2.56 of this Bid Alternate 1 specification for fresh water (jacket water) cooling system requirements.

See section 2.60 of this Bid Alternative 1 specification for diesel exhaust piping system requirements.

See section 2.61 of this Bid Alternative 1 specification for fuel oil system requirements.

See section II-5.51 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification for starting air system requirements.

See section II-5.05 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification for general piping and material requirements.

See section II-5.08 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification for insulation and lagging requirements.

The Contractor shall procure from the engine manufacturer all major components, operators and indicators with attached label plates identifying the component and its function. All internal individual wiring shall have floaters attached, individually identifying the wire. Floaters shall include a reference number to the applicable engine circuit drawing and wire location within the drawing.

Installation shall be in accordance with engine manufacturer's recommendations and requirements stated in this Bid Alternate 1 specification.

Provide all piping, valves, fittings, electrical power, wiring, cabling, connection boxes, foundations and other items and devices not furnished with the engine that are required to make the main engine systems complete, functional, operational, and in full compliance with all Authoritative Agency requirements.

Power for the main engine coolant (block) heater is 240 VAC, see drawing 321-103 AC Electrical One Line for power source. Engine start, engine electronic control unit components, and instrument panels require 12 VDC power.

See drawing 321-102 DC Electrical One line Diagram – Pushboat for power source and section 2.52 of this Bid Alternate 1 specification for controls interface requirements.

2.41 Main Reduction Gear and Clutch Assembly (Pushboat)

2.41.4 Main Engine and Reduction Gear Mounts, Jacking Bolts, and Alignment
The Contractor shall provide and install main diesel engine and reduction gear mounting brackets in accordance with Pushboat drawings Bid Alt 1 117-104 and Bid Alt 1 243-101.

Reduction gear mounting brackets can be obtained from Twin Disc distributor by ordering Mounting Bracket Kit as shown on Twin Disc Drawing 1016428C for SAE 1 Flywheel Housing.

Main engine mounting brackets can be obtained from John Deere distributor by ordering engine Mount option 9701, John Deere Drawing RE57882/RE57814 for Front Support Kit.

Mounting hardware and fastener torque requirements shall be in accordance engine and gear manufacturer's installation instructions. The 6090AFM75 engine and MG5091DC gear assembly will be mounted to foundation structure using the engine forward mounts and the reduction gear side mount as shown in drawing Bid Alt 1 243-101.

The main propulsion diesel engines and reduction gears shall be installed on the foundation using poured epoxy Chockfast® Orange for final positioning and alignment following ITW Polymer Technologies Technical Bulletin # 659G.

Engine and reduction gear coupling and alignment shall be in accordance with manufacturer's recommendation. The Contractor shall design and provide all necessary jacking bolt and brackets on all foundations as required for use in the controlled alignment of the main engine/reduction gear to propulsion shaft train. Provide body fitted bolts, chocking materials, and reaming required on the mating surfaces as set forth in the equipment manufacturers requirements. See section 2.43 of this Bid Alternate 1 specification for additional requirements for alignment with the propeller shaft.

The jacking bolt assemblies shall be fabricated and installed with full weld-out, coated to match the surrounding area, and shall remain installed on the vessel for any future propulsion train alignment adjustments.

2.43 Propulsion Shafting
The Contractor shall furnish, construct and install all propulsion shafting and associated components to include propeller shaft, shaft coupling, stern tube bearing, shaft seal stuffing box, propeller strut bearing and all associated components, support structure, piping and instruments necessary to provide a complete and operational system that meets the requirements of this specification, drawing Bid Alt 1 243-101and drawing 243-102, equipment manufacturer's and Authoritative Agency requirements. Each propeller shaft is to be supported by a shaft bossing and brackets.

Contract guidance drawing 243-102 provides details for propeller shaft material, and construction dimensions and tolerances. The Contractor shall provide for final machining and assembly of the shaft coupling which is to be purchased with the Twin Disc reduction gear assemblies following the manufacturer's recommended procedures and drawing 243-102 requirements.

The Contractor shall perform and document propulsion shafting inspections, measurements, and alignments and report the as-built conditions in writing to the Owner (or Owner's Representative) prior to commencement of dock trials. This report shall include as a minimum:

- shaft sleeve inside and outside diameters,
- shaft coupling seat diameters, key way dimensions, and coupling flange run-out readings
- key, keyway, and taper at the propeller end of the shaft. Inspect the propeller taper fit to the shaft by blue fit method (without drive up).
- Propeller nut inside and tail shaft outside threads, and radiuses; final inspection and dimensions.
- Inspect and measure the stern tube and strut bearing inside (minor) diameters. Measure at both ends and the mid-point of each bearing at the 0-180 degree and 90-270 degree diameters [i.e. two (2) measurements at three (3) locations on two (2) bearings] to establish baseline new construction conditions. Provide final stern tube and strut bearing clearances for both shafts.
- Main engine, reduction gear and shaft alignment readings.

2.52 Propulsion Controls, Instruments and Alarms

The Contractor shall provide all controls necessary for safe operations and to comply with authoritative agency requirements. Primary controls for Main Engines, Reduction Gear Forward and Reverse clutches, auxiliary equipment, ventilation and engine room equipment remote monitoring instruments and alarms shall be provided at the Pilothouse Control Console. Local instrumentation and controls shall also be provided in the engine room for local monitoring, for maintenance and testing, as well as emergency operations.

Install the Main Engine control cabinets in close proximity to the Main Engine Gauge Box as shown on drawing Bid Alt 1 233-102. The intent of this location is to provide close observation of the major pieces of equipment located on the accessory rack, and also to observe cylinder conditions as indicated by snifter outputs during the engine starting sequence. Provide necessary interconnecting tubing, root valves, piping and fittings, hangers and supports, wiring, connection boxes and other items and material not furnished by the engine manufacture, required to properly connect installed Main Engine and Reduction Gear monitoring devices and sensors to a local Main Engine Gauge Box next to each engine and at the Pilothouse Control console.

Twin Disc EC300 Power Commander Electronic Controls shall be configured with the necessary options, approved by the Owner (or Owner's Representative), to provide a fully integrated main engine and reduction gear clutch control at the Pilothouse Console. Location of the EC300 components and cable harness lengths must be closely coordinated with the equipment provider at time of purchase. The EC 300 control system can be obtained from a Twin Disc distributor such as Palmer Johnson Power Systems (PJ Power). Alternate control systems can be proposed by the Contractor subject to approval by IDOT.

All control electrical wires shall be shielded and demonstrated to be inherently immune to electro-magnetic interference (EMI) or radio frequency interference (RFI). Control cable wire harnesses shall be between components provided and procedures for proper installation and termination of control cables shall be in accordance with manufacturer's recommendations and installation manual.

IDOT Ferry operators use handheld VHF radios during normal operations. The Propulsion System electronics, controls and control cables must be shielded from the influences of these devices.

2.56 Jacket Water Cooling (Freshwater)

2.56.1 Main Engine and Generator Jacket Water Cooling

Each Main Engine shall be configured with independent closed-loop high temperature jacket water cooling system. The 6090AFM75 engine is configured with a jacket water pump and thermostat for controlling jacket water circulation and engine temperature. The Contractor shall proved a separate Fernstrum model BN1675B-E1 Grid Cooler for each main engine which will be mounted to port and starboard side of engine room following the requirements of drawings Bid Alt 1 256-101 and Bid Alt 1 256-102.

The Main Engine Jacket Water Cooling System installation shall comply with all engine manufacturer requirements to ensure engine performance is not compromised. The external piping and keel cooler for each Jacket Water Cooling System shall be adequately sized for maximum flow rate of 91 gpm. Pressure drop across the Grid Cooler is 5.5 psi. Normal Jacket water operating temperature is between 160-183o F controlled by engine thermostat.

The Contractor shall provide approximately 12 gallon capacity expansion tank for each main engine Jacket Water cooling system. Expansion tanks shall be installed at least two feet above the top of the jacket water system high point. Each expansion tank shall be provided with a low level alarm set at 50% with indication on Pilothouse engine room alarm panel.

The Main Engine jacket water cooling system shall be filled to provide year round protection against corrosion and freeze protection following the engine manufacturer's coolant recommendations.

The Northern Lights Model M30CW Ship Service Diesel Generator engine shall be also be configured with an independent closed-loop high temperature jacket water cooling system. The Jacket Water Cooling Systems shall utilize Fernstrum®; Model BN845B-E1 grid cooler mounted on port side of Pushboat in accordance with drawings Bid Alt 1 256-101 and Bid Alt 1 256-102 to reject the heat to the river. All requirements in this section and section 2.56.2 of this Bid Alternate 1 specification shall also apply to the generator jacket water system installation. The expansion tank for the diesel generator (Northern Lights Model 10-11205) shall be procured with the generator and installed as shown on drawing Bid Alt 1 233-101 and manufacturer's recommendations.

2.56.2 Grid Cooler and Piping Installation

Installations shall include all structure, coolers, attachments, anodes, and fittings to produce a complete and operational grid cooler system that meets the cooling requirements of that equipment serviced by the cooler under all operational conditions, whether underway, or dock side.

All Jacket Water Cooling piping shall be installed and welded following the requirements of ABS River Rules Part 2 Materials and Welding and Part 4 / Chapter 3 Pumps and Piping Systems.

Construction of the hull recesses, inlet and outlet cofferdams, the two main engine (Fernstrum BN1675B-E1), and one diesel generator grid cooler (Fernstrum BN845B-E1) shall be in accordance with drawing Bid Alt 1 256-102 and Fernstrum installation recommendations.

Grid coolers are to be protected with McNichols GW 75 (3/4"X3/16") stainless steel grating which is to be removable for maintenance as shown on drawing Bid Alt 1 256-102.

Electrically isolate grid coolers from hull at all attachment points and at each nozzle. Do not paint the Grid Coolers.

All jacket water cooling piping inboard of the inlet and outlet cofferdams shall be Schedule 40 seamless galvanized carbon steel piping ASTM A-106 Grade B or A53 Grade B. The requirements of section II-5.05 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification also apply. The Contractor is to route the fresh water cooling piping to the vicinity of the engine cooling water inlet and outlet to minimize connection hose lengths. Fittings shall be carbon steel, butt welded 150#, schedule 40 ASTM A234, ANSI B16.9.

Flexible connections shall be provided between engine coolant connections and the 3" jacket water piping using 3" ID hose that is USCG approved in accordance with 46 CFR subchapter F 56.60 SAE J-1942 and SAE J-1475 and attached with double hose clamps.

The system shall be cleaned, flushed, filled and tested in accordance with 46CFR subpart 56.97 (Class II piping). Pipe hangers shall meet the requirements of ASTM F708. The Contractor shall adjust the design, spacing and installation of pipe hangers as necessary. Takedown joints shall be welded, slip-on carbon steel, 150lb, ASTM 105, ANSI B16.5.

Provide grid cooler inlet and outlet temperature gages located near engine connections. For Main engine grid cooler outlet temperature reading locate at cooling water inlet to the reduction gear lube oil coolers and provide additional temperature gage for lube oil cooler freshwater outlet located near engine inlet.

All gage lines piping assemblies shall be in accordance with ASTM F721-81 requirements. Tubing and fittings are to be made from 316 stainless steel.

All valves not accessible from the floor plates shall be provided with reach rods and visual closure status.

Piping shall be run as directly as practical with a minimum number of bends and fittings and with sufficient joints to provide for removal, inspection, and servicing of valves and equipment. Use long-radius elbows, three-radius elbows, and large radius bends, instead of short-radius elbows.

The Contractor shall install expansion tanks for each system and verify final size based on final installation total system volume (piping, grid coolers and engine) following engine manufacturer's recommendations. Expansion Tanks shall be mount so that bottom of tank is above highest point in the system. Vent lines to the expansion tank shall be provided at all piping system high points to allow complete air removal. Insulate Jacket Water piping as needed for personnel protection in accordance with ASTM F683 using removable blanket type insulation.

2.60 Engine Exhaust

The Contractor shall fabricate and install complete exhaust systems for both main engines and the diesel generator as specified in this section, section II-5.05 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification, and drawing Bid Alt 1 259-101.

Each main engine and the diesel generator shall exhaust through a separate pipe within the Engine Room and routed aft through the Aft Void and Aft Peak Tank. Bulkhead penetrations shall be in accordance with drawing 259-102.

The engine manufacturer's backpressure limits shall not be exceeded in any installation.

Multi-Ply stainless steel flexible connections (expansion joints) shall be installed as shown on drawing Bid Alt 1 259-101, to allow for vibration, thermal and mount deflections. Flexible connections shall be the DME series 655 type or equal as indicated on drawing Bid Alt 1 259-101.

Hangers, anchors and guides shall allow for thermal growth in the exhaust piping and shall isolate heat, noise, and vibration from the Pushboat's structure.

Materials and installation shall be in accordance with section II-5.05 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification.

Ensure that all exhaust runs are sloped so that no concentrated volume of liquid can accumulate.

Provide easy access for all maintenance, removal, and replacement of expansion joints, and gaskets without the necessity of hot work.

The Contractor shall provide complete exhaust systems including exhaust silencer (muffler), flanged exhaust pipe adapters, pipe, fittings, expansion joints, isolation mounts, flanges, gaskets, hangers, foundations, and other items and devices as are required to make complete, functional, and fully operational exhaust systems.

The Contractor shall provide low-point drains installed for the silencers to drain any oil or water accumulations. The drain pipes shall be capped and allow for a 1 gallon bucket to be placed under the open end.

The diesel engine exhaust systems and design shall satisfy all the requirements of the diesel engine manufacturer as to pipe size, bends and other restrictions, such as turbocharger exhaust flange loading, in order to ensure that diesel engine performance and life cycle is not compromised.

The exhaust piping shall be supported as to safely withstand stresses induced by weight, thermal expansion, and vessel motion with hangers fabricated in accordance with ASTM F708.

2.61 Diesel Fuel System

2.61.1 General

The Contractor shall install a diesel fuel system as shown on drawing Bid Alt 1 541-101 for storage and fuel supply to main engines and diesel generator for ASTM D975, Grade Low /Ultra Low Sulfur No. 2-D diesel oil. All materials including gaskets, o-rings, seals, etc. shall also be compatible for use with bio-diesel fuels (B20 to B100).

Due regard shall be given to the changes in temperature that the oil may experience through heat transfer from engine parts (i.e., clean fuel return from injection system), ambient conditions, and other causes when routing piping.

Drip pans shall be permanently installed beneath such items as strainers and filters.

See section II-5.05 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification for general piping and material requirements and section II-5.08 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification for spray shield requirements.

The Contractor shall follow this specification and engine manufacturer's recommendations for fuel line connectors and filtering requirements.

2.61.2 Diesel Fuel Tanks

The Pushboat will have two Fuel tanks that provide for both storage and fuel oil service to the main engines and diesel generator. The aggregate volume of the two fuel tanks is approximately 4,390 gallons. At 95% full, the fuel capacity is approximately 4,170 gallons.

A fuel tank overflow pipe is to be installed so that the two tanks overflow into each other. A spill containment box is to be provided on the portside of the Deckhand Room which contains the tank fill pipes and tank vents as shown on drawing Bid Alt 1 541-101 and drawing 541-102. Both the forward and aft diesel fuel tanks are to be provided with a drainage sump fabricated in accordance with drawing 541-102.

Each fuel tank is to be provided with a Headhunter Model TS-3002B or equal Tank Level Indicator. A Fuel Panel shall be provided in the Pilothouse Console to display the fuel tank levels. See drawings 401-101 and 621-101.

A vertical fill pipe shall also be provided with a graduated dipstick for the purpose of sounding the tank contents.

2.61.3 Fuel System Piping

The diesel fuel system shall consist of the supply/return piping serving the two (2) main engines and the diesel generator. Fuel system suction and return valves shall be grouped and located for convenient access and operation.

The fuel fill pipes shall be provided with hinged style, lockable fill caps, Morrison Brothers Co. Fig.179, or equal. Each fuel tank vent pipe shall be provided with a 180o gooseneck terminal, fitted with a 30 x 30 mesh, corrosion resistant flame screen, having net flow area of at least 5 square inches.

Full-port ball valves, sized to the full diameter of the service supply and return lines piping, shall be provided as shown on drawing Bid Alt 1 541-101. A flexible cable remote operator shall be provided for the three tank suction valves so they can be controlled topside on main deck in the Deckhand Room as shown on drawing Bid Alt 1 541-101. Remote operators shall be flexible cable type such as Elliott Manufacturing or Teleflex type.

See section II-5.05 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification for material and additional piping and valve installation requirements.

Fuel oil supply and return valves shall be readily accessible at each engine.

Diesel oil service return piping to the fuel tanks shall terminate within the tanks in a manner that minimizes fuel aeration.

The supply piping serving each main engine and the diesel generator shall be provided with dedicated full flow, 30 micron, coalescing duplex filter assemblies RACOR Model 75/900 MAXM (metal bowl) or equal in addition to the engine-mounted filter. Each filter assembly shall be provided with a stainless steel drip pan and differential pressure gage.

2.62 Propulsion Lube Oil Systems

2.62.2 Main Reduction Gear Lube Oil and Cooling System

Main reduction gear oil shall be as required by the gear manufacturer and the brand/type utilized by IDOT for other Ferry's when compatible with equipment manufacturer's specifications. Each Reduction Gear is to be provided with attached lube oil pump with all accessories mounted on the gearbox except for the Oil Cooler. The oil cooler is to be installed in series and at the Jacket Water outlet (cold side) of each main engine Keel Cooler as shown in drawing Bid Alt 1 256-101.

Each Twin Disc reduction gear shall be provided with an inline Lube Oil Cooler that is cooled by the jacket water returning from the respective main engine Fernstrom Grid Cooler, as shown on drawing Bid Alt 1 256-101. These heat exchanger kits, available through PJ Power systems (a Twin Disc distributer), are sized for the MG-5091DC gear set. Lube oil heat exchanger requirements for temperature control and oil flow are available on Twin Disc drawing 1002155 sheet three. Oil cooler requirements are summarized below:

- Maximum jacket water inlet temperature = 162oF
- Maximum, Oil Temperature into the lube oil cooler inlet temperature = 185 oF.
- Maximum Oil outlet temperature = 167.4oF.
- Oil line, piping maximum fluid velocity = 25 ft/sec
- Maximum allowable oil pressure drop across heat exchanger is 30 psi @ rated engine rpm.
- Flexible hose connections shall be USCG approved 46 CFR 56.60 SAE J-1942 and SAE J-1475.

General piping requirements of section II-5.05 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification shall apply to lube oil tie-ins to reduction gear oil system, and oil coolers. Refer to section 2.56.2 of this Bid Alternate 1 specification for jacket water cooling piping requirements. Each of the oil cooler heat exchangers are sized for full flow of jacket water and shall be equipped with full-flow isolation ball valves on the Lube Oil Cooler jacket water inlet and outlet. These valves are normally open and can be closed when engine is shutdown for Lube Oil Cooler maintenance. There shall be inlet and outlet thermometers mounted on the jacket water side of each of the oil cooler heat exchangers. Vent lines with isolation valves shall be provided at the high points on outlet side of each cooler.

The reduction gear lube oil systems shall be provided with local and remote reading oil pressure gages, low oil pressure audible/visual alarm located at the Pilothouse Control Console and set in accordance with Twin Disc OEM recommendation for minimum oil pressure, and local /remote oil temperature indication with high temperature alarm set at 185o F on the pilothouse console. Follow Twin Disc manufacturer requirements and drawing 1002155 for connection and location of pressure and temperature gages and oil piping system connections to the lube oil cooler.

The Contractor shall provide an oil drain valve with hand wheel locking device, nipple and cap that is accessible for routine oil change maintenance for both main reduction gear oil sumps.

Materials and installation shall comply with section II-5.05 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification.

Section 5 - Auxiliary Systems

5.08 Insulation and Lagging for Piping, and Machinery

5.08.2 General
All piping and machinery insulation and lagging shall be installed in accordance with the requirements of section II-5.08.2 of the NEW VESSEL CONSTRUCTION FOR BARGE FERRY AND PUSHBOAT specification. For Bid Alternative 1 the minimum extend of protective 20-USSG galvanized sheet metal provided over the insulation and fabric lagging is the segment of exhaust piping from the starboard main engine extending to the first expansion joint.

5.12 Heating Ventilation and Air Conditioning (HVAC) Systems

5.12.3 Engine Room Ventilation
Engine Room supply ventilation shall be provided by a 10,000 CFM vane axial fan installed in accordance with drawing Bid Alt 1 512-102. Supply inlet is via port and starboard weather deck louvers installed at aft end of Pilothouse void space and size as shown on drawing Bid Alt 1 512-102. A single natural exhaust louver shall be installed in the Engine Room aft port upper casing, located and sized as shown on drawing Bid Alt 1 512-102. Supply and exhaust weather deck louvers shall be the suitable materials for marine environment, self draining type and provided with 1/2" bird/rat screen protection.

The Engine Room supply fan shall be HARTZELL model A53C-297VA-STAIKD or equal, 10,000 CFM, @ 0.9 in W.G., 3 HP motor, 1140 rpm, 240 VAC, single phase 60hz with an inlet bell. The supply fan shall be mounted using vibration isolation mounts.

Engine Room supply fan ventilation ducting shall be fabricated using 16 gauge galvanized steel and provided with acoustic liner (sound lined).

Local pushbutton controls are to be provided for the Engine Room supply fan. The local control push button with light indicator shall be located inside the aft Engine Room door near entrance stairway.

PART III – BASIS OF PAYMENT

No additional payment will be allowed for this work and shall be included in the cost of the pay item PUSHBOAT.

STATUS OF UTILITIES TO BE ADJUSTED

NO UTILITIES TO BE ADJUSTED

The above represents the best information of the Department and is only included for the convenience of the bidder. The applicable provisions of Sections 102, 103, and Articles 105.07 and 107.20 of the Standard Specifications for Road and Bridge Construction shall apply.

If any utility adjustment or removal has not been completed when required by the Contractor's operation, the Contractor should notify the Engineer in writing. A request for an extension of time will be considered to the extent the Contractor's operations were affected.

COMPLETION DATE (VIA CALENDAR DAYS) (BDE)
Effective: April 1, 2008

The Contractor shall complete all work on or before the completion date of this contract which will be based upon **270** calendar days.

The completion date will be determined by adding the specified number of calendar days to the date the Contractor begins work, or to the date ten days after execution of the contract, whichever is the earlier, unless a delayed start is granted by the Engineer.

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE)
Effective: September 1, 2000 Revised: August 2, 2011

FEDERAL OBLIGATION. The Department of Transportation, as a recipient of federal financial assistance, is required to take all necessary and reasonable steps to ensure nondiscrimination in the award and administration of contracts. Consequently, the federal regulatory provisions of 49 CFR Part 26 apply to this contract concerning the utilization of disadvantaged business enterprises. For the purposes of this Special Provision, a disadvantaged business enterprise (DBE) means a business certified by the Department in accordance with the requirements of 49 CFR Part 26 and listed in the Illinois Unified Certification Program (IL UCP) DBE Directory.

STATE OBLIGATION. This Special Provision will also be used by the Department to satisfy the requirements of the Business Enterprise for Minorities, Females, and Persons with Disabilities Act, 30 ILCS 575. When this Special Provision is used to satisfy state law requirements on 100 percent state-funded contracts, the federal government has no involvement in such contracts (not a federal-aid contract) and no responsibility to oversee the implementation of this Special Provision by the Department on those contracts. DBE participation on 100 percent state-funded contracts will not be credited toward fulfilling the Department’s annual overall DBE goal required by the US Department of Transportation to comply with the federal DBE program requirements.

CONTRACTOR ASSURANCE. The Contractor makes the following assurance and agrees to include the assurance in each subcontract that the Contractor signs with a subcontractor.

> 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 contracts funded in whole or in part with federal or state funds. 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.

OVERALL GOAL SET FOR THE DEPARTMENT. As a requirement of compliance with 49 CFR Part 26, the Department has set an overall goal for DBE participation in its federally assisted contracts.

That goal applies to all federal-aid funds the Department will expend in its federally assisted contracts for the subject reporting fiscal year. The Department is required to make a good faith effort to achieve the overall goal. The dollar amount paid to all approved DBE companies performing work called for in this contract is eligible to be credited toward fulfillment of the Department's overall goal.

CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. This contract includes a specific DBE utilization goal established by the Department. The goal has been included because the Department has determined that the work of this contract has subcontracting opportunities that may be suitable for performance by DBE companies. The determination is based on an assessment of the type of work, the location of the work, and the availability of DBE companies to do a part of the work. The assessment indicates that, in the absence of unlawful discrimination, and in an arena of fair and open competition, DBE companies can be expected to perform **0.00%** of the work. This percentage is set as the DBE participation goal for this contract. Consequently, in addition to the other award criteria established for this contract, the Department will only award this contract to a bidder who makes a good faith effort to meet this goal of DBE participation in the performance of the work. A bidder makes a good faith effort for award consideration if either of the following is done in accordance with the procedures set for in this Special Provision:

(a) The bidder documents that enough DBE participation has been obtained to meet the goal: or

(b) The bidder documents that a good faith effort has been made to meet the goal, even though the effort did not succeed in obtaining enough DBE participation to meet the goal.

DBE LOCATOR REFERENCES. Bidders shall consult the IL UCP DBE Directory as a reference source for DBE-certified companies. In addition, the Department maintains a letting and item specific DBE locator information system whereby DBE companies can register their interest in providing quotes on particular bid items advertised for letting. Information concerning DBE companies willing to quote work for particular contracts may be obtained by contacting the Department's Bureau of Small Business Enterprises at telephone number (217)785-4611, or by visiting the Department's website at www.dot.il.gov.

BIDDING PROCEDURES. Compliance with this Special Provision is a material bidding requirement. The failure of the bidder to comply will render the bid not responsive.

(a) The bidder shall submit a Disadvantaged Business Utilization Plan on Department forms SBE 2025 and 2026 with the bid.

(b) The Utilization Plan shall indicate that the bidder either has obtained sufficient DBE participation commitments to meet the contract goal or has not obtained enough DBE participation commitments in spite of a good faith effort to meet the goal. The Utilization Plan shall further provide the name, telephone number, and telefax number of a responsible official of the bidder designated for purposes of notification of plan approval or disapproval under the procedures of this Special Provision.

(c) The Utilization Plan shall include a DBE Participation Commitment Statement, Department form SBE 2025, for each DBE proposed for the performance of work to achieve the contract goal.

For bidding purposes, submission of the completed SBE 2025 forms, signed by the DBEs and faxed to the bidder will be acceptable as long as the original is available and provided upon request. All elements of information indicated on the said form shall be provided, including but not limited to the following:

(1) The names and addresses of DBE firms that will participate in the contract;
(2) A description, including pay item numbers, of the work each DBE will perform;
(3) The dollar amount of the participation of each DBE firm participating. The dollar amount of participation for identified work shall specifically state the quantity, unit price, and total subcontract price for the work to be completed by the DBE. If partial pay items are to be performed by the DBE, indicate the portion of each item, a unit price where appropriate and the subcontract price amount;
(4) DBE Participation Commitment Statements, form SBE 2025, signed by the bidder and each participating DBE firm documenting the commitment to use the DBE subcontractors whose participation is submitted to meet the contract goal;
(5) if the bidder is a joint venture comprised of DBE companies and non-DBE companies, the plan must also include a clear identification of the portion of the work to be performed by the DBE partner(s); and,
(6) If the contract goal if not met, evidence of good faith efforts.

GOOD FAITH EFFORT PROCEDURES. The contract will not be awarded until the Utilization Plan submitted by the apparent successful bidder is approved. All information submitted by the bidder must be complete, accurate and adequately document that enough DBE participation has been obtained or document that good faith efforts of the bidder, in the event enough DBE participation has not been obtained, before the Department will commit to the performance of the contract by the bidder. The Utilization Plan will be approved by the Department if the Utilization Plan documents sufficient commercially useful DBE work performance to meet the contract goal or the bidder submits sufficient documentation of a good faith effort to meet the contract goal pursuant to 49 CFR Part 26, Appendix A. The Utilization Plan will not be approved by the Department if the Utilization Plan does not document sufficient DBE participation to meet the contract goal unless the apparent successful bidder documented in the Utilization Plan that it made a good faith effort to meet the goal. This means that the bidder must show that all necessary and reasonable steps were taken to achieve the contract goal. Necessary and reasonable steps are those which, by their scope, intensity and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not successful. The Department will consider the quality, quantity, and intensity of the kinds of efforts that the bidder has made. Mere *pro forma* efforts, in other words, efforts done as a matter of form, are not good faith efforts; rather, the bidder is expected to have taken genuine efforts that would be reasonably expected of a bidder actively and aggressively trying to obtain DBE participation sufficient to meet the contract goal.

(a) The following is a list of types of action that the Department will consider as part of the evaluation of the bidder's good faith efforts to obtain participation. These listed factors are not intended to be a mandatory checklist and are not intended to be exhaustive. Other factors or efforts brought to the attention of the Department may be relevant in appropriate cases, and will be considered by the Department.

(1) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBE companies that have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBE companies to respond to the solicitation.

The bidder must determine with certainty if the DBE companies are interested by taking appropriate steps to follow up initial solicitations.

(2) Selecting portions of the work to be performed by DBE companies in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime Contractor might otherwise prefer to perform these work items with its own forces.

(3) Providing interested DBE companies with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

(4) a. Negotiating in good faith with interested DBE companies. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBE companies that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBE companies to perform the work.

b. A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBE companies is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also the ability or desire of a bidder to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidders are not, however, required to accept higher quotes from DBE companies if the price difference is excessive or unreasonable.

(5) Not rejecting DBE companies as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.

(6) Making efforts to assist interested DBE companies in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.

(7) Making efforts to assist interested DBE companies in obtaining necessary equipment, supplies, materials, or related assistance or services.

(8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBE companies.

(b) If the Department determines that the apparent successful bidder has made a good faith effort to secure the work commitment of DBE companies to meet the contract goal, the Department will award the contract provided that it is otherwise eligible for award. If the Department determines that the bidder has failed to meet the requirements of this Special Provision or that a good faith effort has not been made, the Department will notify the responsible company official designated in the Utilization Plan that the bid is not responsive. The notification shall include a statement of reasons for the determination.

(c) The bidder may request administrative reconsideration of a determination adverse to the bidder within the five working days after the receipt of the notification date of the determination by delivering the request to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764 (Telefax: (217)785-1524). Deposit of the request in the United States mail on or before the fifth business day shall not be deemed delivery. The determination shall become final if a request is not made and delivered. A request may provide additional written documentation and/or argument concerning the issues raised in the determination statement of reasons, provided the documentation and arguments address efforts made prior to submitting the bid. The request will be forwarded to the Department's Reconsideration Officer. The Reconsideration Officer will extend an opportunity to the bidder to meet in person in order to consider all issues of documentation and whether the bidder made a good faith effort to meet the goal. After the review by the Reconsideration Officer, the bidder will be sent a written decision within ten working days after receipt of the request for consideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. A final decision by the Reconsideration Officer that a good faith effort was made shall approve the Utilization Plan submitted by the bidder and shall clear the contract for award. A final decision that a good faith effort was not made shall render the bid not responsive.

CALCULATING DBE PARTICIPATION. The Utilization Plan values represent work anticipated to be performed and paid for upon satisfactory completion. The Department is only able to count toward the achievement of the overall goal and the contract goal the value of payments made for the work actually performed by DBE companies. In addition, a DBE must perform a commercially useful function on the contract to be counted. A commercially useful function is generally performed when the DBE is responsible for the work and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. The Department and Contractor are governed by the provisions of 49 CFR Part 26.55(c) on questions of commercially useful functions as it affects the work. Specific counting guidelines are provided in 49 CFR Part 26.55, the provisions of which govern over the summary contained herein.

(a) DBE as the Contractor: 100 percent goal credit for that portion of the work performed by the DBE's own forces, including the cost of materials and supplies. Work that a DBE subcontracts to a non-DBE does not count toward the DBE goals.

(b) DBE as a joint venture Contractor: 100 percent goal credit for that portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work performed by the DBE's own forces.

(c) DBE as a subcontractor: 100 percent goal credit for the work of the subcontract performed by the DBE's own forces, including the cost of materials and supplies, excluding the purchase of materials and supplies or the lease of equipment by the DBE subcontractor from the prime Contractor or its affiliates. Work that a DBE subcontractor in turn subcontracts to a non-DBE does not count toward the DBE goal.

(d) DBE as a trucker: 100 percent goal credit for trucking participation provided the DBE is responsible for the management and supervision of the entire trucking operation for which it is responsible. At least one truck owned, operated, licensed, and insured by the DBE must be used on the contract. Credit will be given for the following:

(1) 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.

(2) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission is receives as a result of the lease arrangement.

(e) DBE as a material supplier:

(1) 60 percent goal credit for the cost of the materials or supplies purchased from a DBE regular dealer.
(2) 100 percent goal credit for the cost of materials of supplies obtained from a DBE manufacturer.
(3) 100 percent credit for the value of reasonable fees and commissions for the procurement of materials and supplies if not a regular dealer or manufacturer.

CONTRACT COMPLIANCE. Compliance with this Special Provision is an essential part of the contract. The Department is prohibited by federal regulations from crediting the participation of a DBE included in the Utilization Plan toward either the contract goal or the Department's overall goal until the amount to be applied toward the goals has been paid to the DBE. The following administrative procedures and remedies govern the compliance by the Contractor with the contractual obligations established by the Utilization Plan. After approval of the Utilization Plan and award of the contract, the Utilization Plan and individual DBE Participation Statements become part of the contract. If the Contractor did not succeed in obtaining enough DBE participation to achieve the advertised contract goal, and the Utilization Plan was approved and contract awarded based upon a determination of good faith, the total dollar value of DBE work calculated in the approved Utilization Plan as a percentage of the awarded contract value shall become the amended contract goal. All work indicated for performance by an approved DBE shall be performed, managed, and supervised by the DBE executing the Participation Statement.

(a) NO AMENDMENT. No amendment to the Utilization Plan may be made without prior written approval from the Department's Bureau of Small Business Enterprises. All requests for amendment to the Utilization Plan shall be submitted to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764. Telephone number (217)785-4611. Telefax number (217)785-1524.

(b) TERMINATION OR REPLACEMENT. The Contractor shall not terminate or replace a DBE listed on the approved Utilization Plan, or perform with other forces work designated for a listed DBE except as provided in the Special Provision.

(c) CHANGES TO WORK. Any deviation from the DBE condition-of-award or contract plans, specifications, or special provisions must be approved, in writing, by the Department as provided elsewhere in the Contract. The Contractor shall notify affected DBEs in writing of any changes in the scope of work which result in a reduction in the dollar amount condition-of-award to the contract. Where the revision includes work committed to a new DBE subcontractor, not previously involved in the project, then a Request for Approval of Subcontractor, Department form BC 260A, must be signed and submitted. If the commitment of work is in the form of additional tasks assigned to an existing subcontract, than a new Request for Approval of Subcontractor shall not be required. However, the Contractor must document efforts to assure that the existing DBE subcontractor is capable of performing the additional work and has agreed in writing to the change.

(d) ALTERNATIVE WORK METHODS. In addition to the above requirements for reductions in the condition of award, additional requirements apply to the two cases of Contractor-initiated work substitution proposals. Where the contract allows alternate work methods which serve to delete or create underruns in condition of award DBE work, and the Contractor selects that alternate method or, where the Contractor proposes a substitute work method or material that serves to diminish or delete work committed to a DBE and replace it with other work, then the Contractor must demonstrate one of the following:

(1) That the replacement work will be performed by the same DBE (as long as the DBE is certified in the respective item of work) in a modification of the condition of award; or
(2) That the DBE is aware that its work will be deleted or will experience underruns and has agreed in writing to the change. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so; or
(3) That the DBE is not capable of performing the replacement work or has declined to perform the work at a reasonable competitive price. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so.

(e) TERMINATION AND REPLACEMENT PROCEDURES. The Contractor shall not terminate or replace a DBE subcontractor listed in the approved Utilization Plan without prior written consent. This includes, but is not limited to, instances in which the 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. Written consent will be granted only if the Bureau of Small Business Enterprises agrees, for reasons stated in its concurrence document, that the Contractor has good cause to terminate or replace the DBE firm. Before transmitting to the Bureau of Small Business Enterprises any request to terminate and/or substitute a DBE subcontractor, the Contractor shall give notice in writing to the DBE subcontractor, with a copy to the Bureau, of its intent to request to terminate and/or substitute, and the reason for the request. The Contractor shall give the DBE five days to respond to the Contractor's notice.

The DBE so notified shall advise the Bureau and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Bureau should not approve the Contractor's action. If required in a particular case as a matter of public necessity, the Bureau may provide a response period shorter than five days.

For purposes of this paragraph, good cause includes the following circumstances:

(1) The listed DBE subcontractor fails or refuses to execute a written contract;

(2) The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor;

(3) The listed DBE subcontractor fails or refuses to meet the prime Contractor's reasonable, nondiscriminatory bond requirements;

(4) The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;

(5) The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1,200 or applicable state law.

(6) You have determined that the listed DBE subcontractor is not a responsible contractor;

(7) The listed DBE subcontractor voluntarily withdraws from the projects and provides to you written notice of its withdrawal;

(8) The listed DBE is ineligible to receive DBE credit for the type of work required;

(9) A DBE owner dies or becomes disabled with the result that the listed DBE contractor is unable to complete its work on the contract;

(10) Other documented good cause that compels the termination of the DBE subcontractor. Provided, that good cause does not exist if the prime Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the prime Contractor can self-perform the work for which the DBE contractor was engaged or so that the prime Contractor can substitute another DBE or non-DBE contractor after contract award.

When a DBE is terminated, or fails to complete its work on the Contract for any reason the Contractor shall make a good faith effort to find another DBE to substitute for the original DBE to perform at least the same amount of work under the contract as the terminated DBE to the extent needed to meet the established Contract goal.

(f) PAYMENT RECORDS. The Contractor shall maintain a record of payments for work performed to the DBE participants. The records shall be made available to the Department for inspection upon request.

After the performance of the final item of work or delivery of material by a DBE and final payment therefore to the DBE by the Contractor, but not later than thirty calendar days after payment has been made by the Department to the Contractor for such work or material, the Contractor shall submit a DBE Payment Agreement on Department form SBE 2115 to the Regional Engineer. If full and final payment has not been made to the DBE, the DBE Payment Agreement shall indicate whether a disagreement as to the payment required exists between the Contractor and the DBE or if the Contractor believes that the work has not been satisfactorily completed. If the Contractor does not have the full amount of work indicated in the Utilization Plan performed by the BDE companies indicated in the Utilization Plan and after good faith efforts are reviewed, the Department may deduct from contract payments to the Contractor the amount of the goal not achieved as liquidated and ascertained damages. The Contractor may request an administrative reconsideration of any amount deducted as damages pursuant to subsection (h) of this part.

(g) ENFORCEMENT. The Department reserves the right to withhold payment to the Contractor to enforce the provisions of this Special Provision. Final payment shall not be made on the contract until such time as the Contractor submits sufficient documentation demonstrating achievement of the goal in accordance with this Special Provision or after liquidated damages have been determined and collected.

(h) RECONSIDERATION. Notwithstanding any other provision of the contract, including but not limited to Article 109.09 of the Standard Specifications, the Contractor my request administrative reconsideration of a decision to deduct the amount of the goal not achieved as liquidated damages. A request to reconsider shall be delivered to the Contract Compliance Section and shall be handled and considered in the same manner as set forth in paragraph (c) of “Good Faith Effort Procedures” of this Special Provision, except a final decision that a good faith effort was not made during contract performance to achieve the goal agreed to in the Utilization Plan shall be the final administrative decision of the Department.

PAYMENTS TO SUBCONTRACTORS (BDE)
Effective: June 1, 2000 Revised: January 1, 2006

Federal regulations found at 49 CFR §26.29 mandate the Department to establish a contract clause to require Contractors to pay subcontractors for satisfactory performance of their subcontracts and to set the time for such payments.

State law also addresses the timing of payments to be made to subcontractors and material suppliers. Section 7 of the Prompt Payment Act, 30 ILCS 540/7, requires that when a Contractor receives any payment from the Department, the Contractor shall make corresponding, proportional payments to each subcontractor and material supplier performing work or supplying material within 15 calendar days after receipt of the Department payment. Section 7 of the Act further provides that interest in the amount of two percent per month, in addition to the payment due, shall be paid to any subcontractor or material supplier by the Contractor if the payment required by the Act is withheld or delayed without reasonable cause. The Act also provides that the time for payment required and the calculation of any interest due applies to transactions between subcontractors and lower-tier subcontractors and material suppliers throughout the contracting chain.

This Special Provision establishes the required federal contract clause, and adopts the 15 calendar day requirement of the State Prompt Payment Act for purposes of compliance with the federal regulation regarding payments to subcontractors. This contract is subject to the following payment obligations.

When progress payments are made to the Contractor according to Article 109.07 of the Standard Specifications, the Contractor shall make a corresponding payment to each subcontractor and material supplier in proportion to the work satisfactorily completed by each subcontractor and for the material supplied to perform any work of the contract. The proportionate amount of partial payment due to each subcontractor and material supplier throughout the contracting chain shall be determined by the quantities measured or otherwise determined as eligible for payment by the Department and included in the progress payment to the Contractor. Subcontractors and material suppliers shall be paid by the Contractor within 15 calendar days after the receipt of payment from the Department. The Contractor shall not hold retainage from the subcontractors. These obligations shall also apply to any payments made by subcontractors and material suppliers to their subcontractors and material suppliers; and to all payments made to lower tier subcontractors and material suppliers throughout the contracting chain. Any payment or portion of a payment subject to this provision may only be withheld from the subcontractor or material supplier to whom it is due for reasonable cause.

This Special Provision does not create any rights in favor of any subcontractor or material supplier against the State or authorize any cause of action against the State on account of any payment, nonpayment, delayed payment, or interest claimed by application of the State Prompt Payment Act. The Department will not approve any delay or postponement of the 15 day requirement except for reasonable cause shown after notice and hearing pursuant to Section 7(b) of the State Prompt Payment Act. State law creates other and additional remedies available to any subcontractor or material supplier, regardless of tier, who has not been paid for work properly performed or material furnished. These remedies are a lien against public funds set forth in Section 23(c) of the Mechanics Lien Act, 770 ILCS 60/23(c), and a recovery on the Contractor's payment bond according to the Public Construction Bond Act, 30 ILCS 550.

SUBCONTRACTOR MOBILIZATION PAYMENTS (BDE)
Effective: April 2, 2005 Revised: April 1, 2011

To account for the preparatory work and operations necessary for the movement of subcontractor personnel, equipment, supplies, and incidentals to the project site and for all other work or operations that must be performed or costs incurred when beginning work approved for subcontracting according to Article 108.01 of the Standard Specifications, the Contractor shall make a mobilization payment to each subcontractor.

This mobilization payment shall be made at least 14 days prior to the subcontractor starting work. The amount paid shall be equal to 3 percent of the amount of the subcontract reported on form BC 260A submitted for the approval of the subcontractor's work.

The mobilization payment to the subcontractor is an advance payment of the reported amount of the subcontract and is not a payment in addition to the amount of the subcontract; therefore, the amount of the advance payment will be deducted from future progress payments.

This provision shall be incorporated directly or by reference into each subcontract approved by the Department.

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

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ATTACHMENTS

A. Employment Preference for Appalachian Contracts (included in Appalachian contracts only)

I. GENERAL

1. These contract provisions shall apply to all word 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.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

Section I, paragraph 2;
Section IV, paragraphs 1, 2, 3, 4 and 7;
Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 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 DOL, or the contractor's employees or their representatives.

6. Selection of Labor: During the performance of this contract, the contractor shall not:

a. Discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or
b. Employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

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 (28 CFR 35, 29 CFR 1630 and 41 CFR 60 (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 Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 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 State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.
b. The contractor will accept as his 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, 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, preapprenticeship, and/or on-the-job-training."

2. EEO Officer: The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for an must be capable of effectively administering and promoting an active contractor program of EEO 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 who 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.
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 minority group employees.
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 minority groups 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 employees referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish which such identified sources procedures whereby minority group 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, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)
c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group 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, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure 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 his 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 his avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.
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. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.
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 minority group and women employees 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 his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. 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 best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.
b. The contractor will use best 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, 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 SHA 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 minority and women 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, national origin, age or disability; making full efforts to obtain qualified and/or quailifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) 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 SHA.

8. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.
b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from SHA personnel.
c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

9. 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 completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

a. The records kept by the contractor shall document the following:
(1) The number 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;
(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and
(4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.
b. The contractors will submit an annual report to the SHA 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. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

III. NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of $10,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. General:

a. All mechanics and laborers employed or working upon the site of the work 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 (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall 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. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, 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 shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. 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.

c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

2. Classification:

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

(1) the work to be performed by the additional classification requested is not performed by a classification in the wage determination;

(2) the additional classification is utilized in the area by the construction industry;

(3) the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) with respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification 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 shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour 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.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional 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 shall refer the question, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advised the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

3. Payment of Fringe Benefits:

a. 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 or subcontractors, as

appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any cost 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, 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.

4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:

a. Apprentices:

(1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in 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 the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall 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 for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

(1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

(2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which cases such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers:

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV. 2. Any worker listed on a payroll at a helper wage rate, who is not a helper under a approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

5. 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. 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 journeymen shall not be greater than permitted by the terms of the particular program.

6. Withholding:

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainee's and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, 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.

7. Overtime Requirements:

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. Violation:

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. 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, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. Withholding for Unpaid Wages and Liquidated Damages:

The SHA shall; upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

V. STATEMENTS AND PAYROLLS

(Applicable to all Federal-aid construction contracts exceeding $2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. Compliance with Copeland Regulations (29 CFR 3):

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

2. Payrolls and Payroll Records:

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found 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 Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.

c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for submitting payroll copies of all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;

(2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed 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 the Regulations, 29 CFR 3;

(3) that each laborer or mechanic has been paid not less that the applicable wage rate and fringe benefits or cash equivalent for the classification of worked performed, as specified in the applicable wage determination incorporated into the contract.

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U/S. C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such

actions 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 may be grounds for debarment action pursuant to 29 CFR 5.12.

VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR

1. On all federal-aid contracts on the national highway system, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than $1,000,000 (23 CFR 635) the contractor shall:

a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.

c. Furnish, upon the completion of the contract, to the SHA resident engineer on /Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

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 State. 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 contractors' own organization (23 CFR 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly 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, assignee, or agent of the prime contractor.

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 on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII 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. 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 SHA 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 SHA 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 SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

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 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA 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.

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 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. 333).

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. 333).

IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

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, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS

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 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined not more than $10,000 or imprisoned not more than 5 years or both."

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

(Applicable to all Federal-aid construction contracts and to all related subcontracts of $100,000 or more).

By submission of this bid or the execution of this contract, or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. Instructions for Certification - Primary Covered Transactions:

(Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary 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 participant shall submit an 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 primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.
d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
e. The terms "covered transaction," "debarred," "suspended," "ineligible,""lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.
f. The prospective primary 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.
g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
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. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded from Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.
i. 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.
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.

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Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from

covered transactions by any Federal department or agency;
b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and
d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

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2. Instructions for Certification - Lower Tier Covered Transactions:

(Applicable to all subcontracts, purchase orders and other lower tier transactions of $25,000 or more - 49 CFR 29)
a. By signing and submitting this proposal, the prospective lower tier 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.
d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
e. The prospective lower tie 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.
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.
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 may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.
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 dealing.
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.

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Certification Regarding Debarment, Suspension, Ineligibility And Voluntary Exclusion-Lower Tier Covered Transactions:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

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XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000 - 49 CFR 20)

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 his or her bid or proposal that he or she 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.

MINIMUM WAGES FOR FEDERAL AND FEDERALLY ASSISTED CONSTRUCTION CONTRACTS

This project is funded, in part, with Federal-aid funds and, as such, is subject to the provisions of the Davis-Bacon Act of March 3, 1931, as amended (46 Sta. 1494, as amended, 40 U.S.C. 276a) and of other Federal statutes referred to in a 29 CFR Part 1, Appendix A, as well as such additional statutes as may from time to time be enacted containing provisions for the payment of wages determined to be prevailing by the Secretary of Labor in accordance with the Davis-Bacon Act and pursuant to the provisions of 29 CFR Part 1. The prevailing rates and fringe benefits shown in the General Wage Determination Decisions issued by the U.S. Department of Labor shall, in accordance with the provisions of the foregoing statutes, constitute the minimum wages payable on Federal and federally assisted construction projects to laborers and mechanics of the specified classes engaged on contract work of the character and in the localities described therein.

General Wage Determination Decisions, modifications and supersedes decisions thereto are to be used in accordance with the provisions of 29 CFR Parts 1 and 5. Accordingly, the applicable decision, together with any modifications issued, must be made a part of every contract for performance of the described work within the geographic area indicated as required by an applicable DBRA Federal prevailing wage law and 29 CFR Part 5. The wage rates and fringe benefits contained in the General Wage Determination Decision shall be the minimum paid by contractors and subcontractors to laborers and mechanics.

NOTICE

The most current **General Wage Determination Decisions** (wage rates) are available on the IDOT web site. They are located on the Letting and Bidding page at http://www.dot.state.il.us/desenv/delett.html.

In addition, ten (10) days prior to the letting, the applicable Federal wage rates will be e-mailed to subscribers. It is recommended that all contractors subscribe to the Federal Wage Rates List or the Contractor's Packet through IDOT's subscription service.

PLEASE NOTE: if you have already subscribed to the Contractor's Packet you will automatically receive the Federal Wage Rates.

The instructions for subscribing are at http://www.dot.state.il.us/desenv/subsc.html.

If you have any questions concerning the wage rates, please contact IDOT's Chief Contract Official at 217-782-7806.