

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF</b>			1. CONTRACT ID CODE J	PAGE OF PAGES 1   7
2. AMENDMENT/MODIFICATION NO. 0001	3. EFFECTIVE DATE 19-Aug-2004	4. REQUISITION/PURCHASE REQ. NO. W25PHS-4184-0392		5. PROJECT NO.(If applicable)
6. ISSUED BY US ARMY ENGINEER DISTRICT, PHILADELPHIA CONTRACTING DIVISION WANAMAKER BUILDING 100 PENN SQUARE EAS PHILADELPHIA PA 19107-3390	CODE W912BU	7. ADMINISTERED BY (If other than item 6) US ARMY ENGINEER DISTRICT, PHILADELPHIA POC: CHERITA WILLIAMS WANAMAKER BUILDING 100 PENN SQUARE EAST PHILADELPHIA PA 19107-3390		CODE E5CTSCLW
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		X	9A. AMENDMENT OF SOLICITATION NO. W912BU-04-B-0026	
		X	9B. DATED (SEE ITEM 11) 03-Aug-2004	
			10A. MOD. OF CONTRACT/ORDER NO.	
			10B. DATED (SEE ITEM 13)	
CODE	FACILITY CODE			
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS				
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended.				
Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning <u>1</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.				
12. ACCOUNTING AND APPROPRIATION DATA (If required) Provide One Triple Screw Steel Tow Boat				
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.				
X	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.			
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).			
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:			
	D. OTHER (Specify type of modification and authority)			
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.				
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)  The following is Amendment 0001 for Solicitation W912BU-04-B-0026 to Provide One Triple Screw Steel Towboat. Please indicate receipt of this Amendment on Standard Form 33 (Solicitation, Offer, Award) as Amendment 0001. Failure to acknowledge all Amendments may be a cause for rejection of the bid.  (Continued on next page.)				
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.				
15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)		
15B. CONTRACTOR/OFFEROR  (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)		16C. DATE SIGNED

EXCEPTION TO SF 30  
APPROVED BY OIRM 11-84

30-105-04

STANDARD FORM 30 (Rev. 10-83)  
Prescribed by GSA  
FAR (48 CFR) 53.243

## C472 NAVIGATION EQUIPMENT

### A. GENERAL REQUIREMENTS

Navigation equipment shall be furnished for the towboat in accordance with USCG Regulations 33 CFR, Subchapter P - Part 164, Navigation Safety Regulations. The equipment provided shall allow for operation on the Mississippi River and the Gulf Intracoastal Waterway (GIWW).

As a minimum, the following equipment shall be provided and installed:

- Two radar monitors and three radar arrays (see below)
- Two fathometers (depth sounder) with two transducers: port & starboard
- One swing meter
- One GPS/DGPS similar to Furuno with chart plotter
- Two VHF radios, similar to ICOM, with antennas
- One air horn with whistle light
- One automatic foghorn/light combination
- One wind monitor

Appropriate navigation lights and shapes (day markers) as required for operation on the Mississippi River and the Gulf Intracoastal Waterway (GIWW) shall be provided for the vessel in accordance with the USCG Navigation Rules International-Inland. The installation of the navigation lights and the searchlights are defined in contract Clause C730.

### B. SPECIFIC EQUIPMENT REQUIREMENTS

#### 1. Radar System

The vessel shall be provided with two radar arrays on the pilothouse top and two monitors (displays) located in the pilothouse. All radar equipment located on the Pilothouse top shall be installed to allow manual lowering in order to meet the maximum air draft requirement, however it is not required that the equipment be operable in the lowered position.

The system shall also be configured to allow the port radar display to read signals from a remote radar array located on the head of the tow. In order to read signals from the remote radar array, the Contractor shall install a selector switch integrated with the port radar monitor. The selector switch shall allow the operator to use the port radar monitor to either receive signals from the port side radar array located on the house top or from a remote radar array located on the forward head of the tow. Cabling shall be supplied and installed from the port radar monitor and selector switch in the pilothouse to

a receptacle on the port towknee. The Contractor shall supply and install the receptacle, along with a matching plug for the receptacle and 200 feet of cable for connecting the remote radar array on the head of the tow.

2. Depth Sounder & Transducers

Depth sounder supplied shall allow for reading signals from the port and starboard transducers.

C. AIR HORN REQUIREMENTS

An air horn, similar to a Kahlenberg model Q3-A, figure #413 air horn with light bracket and M-300 whistle light (clear lens) shall be provide and installed. The horn, whistle light, and light bracket shall be chrome plated. The air horn shall be supplied with a bronze manual whistle valve. Air for the horn shall be supplied from a dedicated air compressor and receiver similar to those available from Kahlenberg. See contract Clause C690 for air receiver requirements.

D. WIND MONITOR

A wind monitoring system similar to those manufactured by R.M. Young Company shall be supplied and installed on the pilothouse top. The contractor shall install a wind display similar to Model #06206 in the pilothouse in addition to a signal line surge protector. The contractor shall use 5-conductor, shielded, 22 AWG sensor cabling throughout the system. The Contractor shall supply and install all wiring required to supply power to the system. All wind monitoring equipment located on the Pilothouse top shall be installed to allow lowering in order to meet the maximum air draft requirement.

## C605 PROPULSION SYSTEM

### A. CONTRACT DESIGN DEVELOPMENT

The propulsion system for the contract level design has been developed utilizing:

- Cummins Diesel Model QSK 19 M, rated at 660 bhp at 1800 rpm, ~~and~~ (Note: The Cummins Diesel Model QSK 19 M is not currently ABS approved and will therefore, not meet the specification. The Contractor shall revise the design and the design drawings to reflect the selected alternatives. This shall be coordinated with CT Marine as per Contract Clause C006.)
- Twin Disc 5170 DC horizontal, offset reverse reduction gears. The gears have a reduction ratio of 4.50:1.

The contract drawings supplied with this solicitation reflect the Cummins engines and Twin Disc reduction gears.

Alternative engines and gears may be selected at the Contractor's discretion in accordance with the requirements identified below, with the alternatives meeting the identified requirements.

If alternative engines and/or gears are selected, the Contractor is responsible for revising the design and the design drawings to reflect the selected alternatives.

### B. CONTRACT DRAWINGS

#678-B605-01 PROPULSION & SHAFTING ARRANGEMENT

#678-B615-01 STEERING LINKAGE & STRUT DETAILS

### C. MAIN ENGINES

The Contractor shall provide and install three, identical, marine 4-stroke-cycle diesel engines of American manufacture. Each engine shall be equipped with full authority, electronic computer controlled fuel injection systems.

The engines shall be installed so that when the clutches are engaged to propel the vessel forward, the port and starboard propellers rotate "inboard at the top". The center propeller shall rotate in the same direction as the port propeller.

Each engine shall be ~~continuous~~-rated, with an ~~engine continuous~~ heavy duty power rating of no less than ~~660-640~~ bhp at a rated speed of 1800 rpm or 2100 rpm. Each engine shall be turbocharged/aftercooled. The reduction gears shall be designed in accordance with Section F of Contract Clause C605.

The control system supplied shall serve two stations, the engineer's control room (station #1) and the pilothouse (station #2). Each control station shall be equipped with three single lever control heads, one for each engine. The main station for the control heads (throttles) shall be the engineer's control room. Control is granted/transferred from this station to the pilothouse control head. Control of the throttles may be taken away from the pilothouse to the engineer's control room at any time.

The control system shall also interface with the steering electronic controls to allow for independent flanking rudder and steering rudder operation. See contract Clause C615 for these requirements.

Power for the control system shall be set up such that:

- The power supplied is from a clean source.
- Back-up source of power is automatically transferred to in the event of a loss of primary power.

#### H. MAIN ENGINE INSTRUMENTATION & ALARMS

The Contractor shall supply and install the standard, local instrumentation panel supplied by the engine manufacturer. The local instrumentation panels shall be mounted inboard, between the main engines.

Each main engine shall be provided with an engine monitoring system available from the engine manufacturer. For this vessel the Contractor shall supply and install a system similar to the Advanced Quantum System from Cummins [or the Caterpillar Engine Vision System and a Caterpillar Engine Monitoring System](#).

The monitoring system provided and installed shall report and display engine system diagnostics and present audible and visual alarms for any of the engine and gear parameters measured. All audible alarms shall be provided with silencer buttons.

The monitoring system shall be installed in the engineer's control room and shall allow for the simultaneous monitoring of each main engine and gear's operating parameters. For engine monitoring in the pilothouse, the Contractor shall supply and install the monitoring system for each main engine and gear set. All pilothouse instrumentation shall be furnished with lights and dimmer switches.

The instrumentation provided for the engineer's control room shall be connected to an audible horn and flashing light located in the upper engine room as well as a set located in the lower engine room to give notice of an engine or gear problem.

6. Set up so that port and starboard propellers rotate inboard at the top. The center propeller shall rotate in the same direction as the port propeller.
7. Each propeller shall be provided with a fairwater cap covering the propeller nut and providing for smooth water flow.
8. Provided with pull holes in the hubs.

D. DESCRIPTION OF WORK

The Contractor shall install the propellers in accordance with the contract drawings listed above.

The propeller shall meet ISO R484, Class I for pitch tolerance and ISO R484, Class II fabrication, finish, and balance requirements. The contractor shall provide an ABS statement of fact that the ISO criteria are met. ABS certificates shall be provided to the COR for each propeller including the spares. See contract Clause C805 for spares.

E. NOZZLES

Each vessel shall be equipped with propeller nozzles with integral struts. The entire inside of the nozzles, including leading and trailing edge radii, shall be stainless steel. The nozzle profile shall be type CT-28. The nozzle length shall be ~~36.0~~39.25 inches and the inside diameter shall be 53.0 inches.

No part of the nozzle shall extend below the baseline. The nozzle shall be designed and constructed in accordance with the Contract Drawing. The nozzles shall be designed and constructed to be integral with the hull structure.

C610 SHAFTING SYSTEM

A. CONTRACT DESIGN DEVELOPMENT

The shafting system shown on the contract drawings has been designed and sized in conjunction with the engines and gears selected for the contract level design (i.e. main engines of 660 bhp at 1800 rpm and marine gears with a reduction ratio of 4.50:1).

As identified in the contract clauses above, the Contractor, at his discretion, may select alternative engines and gears.

If the Contractor implements changes to the engines and/or gears selection, he must match the power and shaft rpm parameters defined by the engine RPM and gear ratio given above.

## C612 RUDDERS

### A. CONTRACT DRAWINGS

#678-B605-01 PROPULSION & SHAFTING ARRANGEMENT  
#678-B612-01 STEERING & FLANKING RUDDERS  
#678-B615-01 STEERING LINKAGE & STRUT DETAILS

### B. DESCRIPTION OF WORK

The contract drawings listed above present a Contract Design for the steering and flanking rudders. During the Detailed Design the Contractor shall verify that the rudder stock scantlings meet the requirements of the current ABS Rules.

Design speed for the steering and flanking rudders shall be 10 mph. The hard over angle for all rudders shall be 45 degrees. It should be noted that ABS requires increases in stock size for rudders that rotate more than 35 degrees, and for speeds in excess of 10 mph.

The Contractor shall perform all detailed engineering necessary to incorporate the rudders into the steering system final design including rudder construction, stocks, bearings, stops, grease seals, grease fittings and keys.

### C. GENERAL REQUIREMENTS

All cylinder foundations, jockey bars, and tillers shall be fitted with bronze bushings. Bushings shall be located where the cylinders meet the foundations or tillers and where the jockey bars meet the tillers.

Pins supplied shall be stainless steel. There shall be grease grooves on the pins with drilled passageways and alemite fittings. The Contractor shall ensure that all pins installed do not result in a loose fit. Anti-rotation clips shall be installed for the pins joining the jockey bars to the tiller arms.

Rudder stocks shall be fabricated from ABS approved steel with nickel-chrome-boron liners in way of the upper and lower bearings. The upper and lower rudder stock bearings shall be ~~made from SAE 660 bronze pressed into the housings~~fabricated from material similar to Thordon GM2401 Composite.

The steering and flanking rudder tubes shall be sealed at the bottom with grease seals and packed with grease.