AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
	1

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0004	5/13/2002	W25PHS-2036-5009	

6. ISSUED BY CODE

US ARMY ENGINEER DISTRICT, PHILA
CONTRACTING DIVISION
WANAMAKER BUILDING
100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

7. ADMINISTERED BY *(If other than Item 6)* CODE

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

CODE FACILITY CODE

(√) X

9A. AMENDMENT OF SOLICITATION NO.
DACW61-02-R-0027`

9B. DATED *(SEE ITEM 11)*
28 FEB 2002

10A. MODIFICATION OF CONTRACTS/ORDER NO.

10B. DATED *(SEE ITEM 13)*

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☒ is extended, ☐ is not extended.

Offers 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 _____ 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)*
DESIGN, CONSTRUCT, TEST AND DELIVER A COMMERCIAL CRANE

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(√)

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 ☐ is not, ☐ 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 PROPOSAL DUE DATE IS HEREBY EXTENDED TO JUNE 13, 2002 AT 4:00 P.M.

SECTION C - DESCRIPTION/SPECIFICATION/STATEMENT OF WORK - Delete pages C-1 thru C-23 in their entirety and substitute with the revised page numbers C-1 thru C-25 annotated Amendment Number 0004 which are attached hereto.

SECTION L - REPRESENTATIONS AND INSTRUCTIONS - Delete page L-4 in it's entirety and substitute with the revised page L-4 annotated Amendment Number 0004 which is attached hereto.

Please acknowledge receipt of this Amendment on Standard Form 1449 (SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS) as Amendment Number 0004. Failure to acknowledge all Amendments may be cause for rejection of the offer.

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	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)		BY *(Signature of Contracting Officer)*	

THIS PAGE HAS BEEN LEFT INTENTIONALLY BLANK

PART I – THE SCHEDULE – SECTION C
DESCRIPTION/SPECIFICATION/WORK STATEMENT

INDEX

CLAUSE **PAGE**

PART I – THE SCHEDULE - SECTION C DESCRIPTION/SPECIFICATION/WORK STATEMENT

C000 GENERAL

C001 GENERAL MISSION STATEMENT

The Army Corps of Engineers, Marine Design Center (MDC), is issuing a Request For Proposals (RFP), to procure and contract all services (Engineering, Design, Construction, Testing and Delivery) associated with the acquisition of a new crane to be installed in a fixed location on a barge platform that will be procured under a separate contract. The completed vessel will be a Floating Crane for the Little Rock District of the Corps of Engineers.

Specific information on the crane (crane geometry and crane weight data) is imperative for the adequate design of the barge portion of the Floating Crane (barge arrangement, arrangement and capacity of the ballast system, intact stability and crane load handling stability).

C002 MISSION STATEMENT

The new Floating Crane, designated the Montgomery Point Floating Crane, will be a new vessel used for operation, maintenance, and repair support for the new Montgomery Point Lock and Dam on the White River in the Little Rock District.

The crane shall provide, on a floating platform, the equipment required to safely and efficiently perform all of the missions associated with navigation and maintenance.

The primary mission of the new Floating Crane is to provide lifting capacity on a floating platform and to perform hoisting operations associated with the maintenance and repair of the Montgomery Point Lock and Dam in a safe and effective manner.

The mission area is the Montgomery Point Lock and Dam on the White River, 0.5 miles upstream of its confluence with the Mississippi River.

The new Floating Crane will operate year round, day and/or night. The crane shall be designed to withstand the ambient temperature range from 10^0 to 110^0 F (dry bulb).

Under tow, the vessel will pass under bridges. The design air draft above the waterline requires that the crane in the stowed position must not be higher than 43’ above the deck of the barge (maximum air draft of 51'-0").

C003 DESIGN STANDARDS

The crane shall be designed and constructed in compliance with:

- ASME/ANSI B30.8 – Floating Cranes and Floating Derricks.
- ASME/ANSI B30.10 – Hooks.
- ASME/ANSI B30.19 – Cableways.
- American Society of Welding Standards for Welding Steel.
- Institute of Electrical and Electronic Engineers Standards, Publication No. IEEE-45 – Recommended Practice for Electrical Installation on Shipboard.
- National Electric Code (NEC).
- U. S. Army Corps of Engineers Safety and Health Requirements Manual, EM385-1-1.

C004 CLASSIFICATION AND CERTIFICATION

The crane will not be ABS certified.

C040 SCOPE OF WORK

After Contract Award, the services to be provided by the Contract shall be structured into three phases, as outlined in Section H, and will be managed by the Marine Design Center (MDC).

After the crane has been completed and tested, it shall be packaged for shipment by the Crane Contractor. The costs associated with packaging, and with the operation of loading and securing the crane on a suitable truck to be provided by the Government, are the responsibility of the Crane Contractor. The Crane Contractor is responsible for the truck costs for all time spent loading the crane at the Contractor's facility. The Government, at its own cost, will transport the crane to the site of the barge construction. The Government will install the crane on the barge. The Contractor shall provide technical assistance and assure that all parts and movements of the crane are in proper working order.

During the crane installation and assembly, there shall be at least one Crane Contractor representative on site at the installation location, to provide survey support, and to ensure that the installation and assembly is executed properly, and according to approved procedures. The procedures will be developed and executed by the Government based on the Crane Contractor's written procedures for installation, assembly, inspections and testing. The Crane Contractor shall prepare a document of procedures for installation, assembly, inspections and testing.

After the crane is assembled on the Government's barge, during the barge test period, the Crane Contractor shall provide the services of operators and other qualified personnel, and carry out CRANE DOCK TRIALS (LEVEL 3), to demonstrate proper operation and proper performance of the crane.

The Crane Contractor is responsible for obtaining MDC approval for these crane tests.

All crane test loads shall be provided and placed within reach of the crane by the Crane Contractor. The rigging necessary for each test shall be provided by the Government and must be acceptable to the Crane Contractor and to the Contracting Officer's Representative (COR).

C100 SCIENTIFIC

C105 PRINCIPAL DIMENSIONS

The crane must comply with the following principal dimensions:

CRANE HEIGHT – The height of the crane in the stowed configuration must not exceed 43'-0" above the deck of the barge (this assumes a barge draft not to be less than 4'-0" in any loading condition). Less crane height in the stowed position is desirable. Height adjustment may need to be made if the barge draft differs.

TAILSWING – The tailswing of the crane shall not exceed a 30' radius, from the center of rotation of the crane. Less is desirable.

BOOM LENGTH – The ~~preferred~~ boom length from the heel pins to the main hoist ~~is~~ shall be approximately 160 feet. ~~A boom of greater length is acceptable, however the boom shall be no less than 155 feet.~~ Boom reaches and lift capacities shown in Clause C540.D must be attainable. Minimum separation distance between the main hoist and the auxiliary hoist block shall be 5 feet.

RADIUS REACH – The minimum radius reach for the main hoist shall be 30 feet (from the center of rotation) or less. Less is desirable.

ADDITIONAL BOOM LENGTH – The crane shall be supplied with additional boom parts to make up a 200 foot (heel pins to main hoist) boom.

C115 WEIGHT ESTIMATE

The Crane manufacturer shall provide their standard crane reference drawings showing the weight and CG (along all 3 axes) of the cab, boom, foundation ring, counterweights, engine and fuel oil day tank. More weights and CGs of assemblies and sub-assemblies is desirable if included in the crane manufacturer's standard crane information package.

During construction, the report shall be revised with actual measured weights and coordinates of the centers of gravity with respect to the three dimensional coordinate system.

C155 STABILITY OF THE FLOATING CRANE

This section is included for information only.

The load handling stability limits shall be as follows:

- Machine list (crane list to the left or the right of vertical) shall not exceed 3.0 degrees.
- Machine trim (crane trim forward or aft of the vertical) shall not exceed 5.0 degrees.

C180 NOISE AND VIBRATION CONTROL & ABATEMENT

There shall be an effective integrated noise and vibration control and transmission abatement program.

The noise level inside the crane cab shall not exceed 75dbA.

The noise pressure level shall be limited to 80dbA on the main deck of the barge, at 50 ft radius around the crane, with the crane operating at full power.

Diesel engines shall be mounted on vibration dampeners (resilient mounts) to reduce vibration and associated noise.

C200 ARRANGEMENTS

C215 GENERAL ARRANGEMENT

The General Arrangement drawing of the crane shall be developed, to include plan and outboard profile views of the crane in the required operating configuration and in the stowed configuration. All principal dimensions shall be as indicated.

The operating rigging configuration to be shown on the drawing is for general lifting.

C235 CRANE CAB

A drawing representing the arrangement of the cab shall be developed, including the location of controls and instrumentation. A plan view and elevations on all walls shall be provided to properly detail the location of controls and instrumentation. The crane controls shall be shown with respect to the operator's chair.

The drawing must depict, in detail, the location of the components, their installation, and include a list of materials and equipment, indicating the vendor source.

C245 MACHINERY ARRANGEMENT

The crane manufacturer shall provide his standard drawing package that includes, as a minimum, drawings of the general arrangement of the crane machinery.

C300 STRUCTURE

C305 SCANTLING PLANS

The crane scantlings and framing shall be that recommended by the manufacturer.

The crane shall be suitable for permanent mounting on the barge platform by a method integral with the barge hull structure. The crane can be of any type mount (i.e., tub mounted or bearings at two different levels, pedestal mounted, "king-post", etc.).

The crane manufacturer shall design and fabricate the crane pedestal/tub/king-post mating flange. The design shall be made available to the Government for integration into the hull pedestal design.

In the scantling drawing of the crane base, the crane manufacturer shall provide the highest design loads imposed on the mating flange by the crane.

Suitable foundations shall be provided under all reciprocating units of machinery. Necessary foundation stiffness shall be provided to prevent system resonance as well as resilient mounts. All corners shall be ground smooth.

C317 BOOM SUPPORT

The boom support will be located on the main deck of the barge platform. The boom support will be used to stow and secure the crane boom when the crane is not in operation and while in transit.

The crane manufacturer shall provide specifications and design guidance for the boom support. The Government contracted barge manufacturer will design and construct the boom support and necessary under deck support structure. The crane manufacturer shall provide the design loads imposed on the boom support.

The configuration and location of the boom rest shall take into consideration:

- The routing of the crane wires, and shall be adequate not to cause interference with the wires.
- That the local strength of the boom in way of the support is appropriate to prevent damage to the boom.
- That the boom rest shall be mounted on the main deck.

C320 TANKS

The capacity of the fuel oil day tank on the crane shall provide for at least 24 hours of continuous operation of the crane at 75% full power.

The design and construction of the fuel oil day tank shall consider optimization of space, reduced paint requirements, improved corrosion resistance and reduction of maintenance.

C400 OUTFIT

C406 COATING SYSTEM

A. CORROSION PREVENTION

The choice of materials, the fabrication procedures and the coating systems to be used in the crane shall evidence that careful consideration was given by the Contractor to improve corrosion resistance and life expectancy.

As an example, the structure shall be designed and fabricated to avoid corrosion, by effectively:

- Preventing the entrapment of water, avoiding pockets where water can accumulate and facilitating drainage,
- Facilitating the application of paint coating, (i.e. ~~not using intermittent welding - must use~~ maximizing the use of double continuous welding throughout),
- Insulating against galvanic corrosion, the contact surfaces between dissimilar metals.

B. SURFACE PREPARATION

The paint systems shall be applied to surfaces clean of weld spatter, dirt, oil and grease.

Surface preparation shall be in accordance with the crane manufacturer's standard paint system for marine application.

All heat affected areas, as well as any areas in which the paint has deteriorated, shall be cleaned of weld slag and spatter, and repainted.

C. PAINTING

The interior and exterior paint systems shall be the crane manufacturer's standard product for marine application.

All paints shall be free of lead, chrome and conform with EPA low VOC requirements.

The paint system shall be recommended and certified by the paint manufacturer to have a life expectancy of at least 15 years.

The following areas shall not be painted:

- Brass, rubber seals and gaskets
- Stainless steel
- Electrical cables
- Varnished wood

The paint colors shall be the standard colors provided by the crane manufacturer on their typical marine operations crane.

Prior to packaging for shipment, all interior and exterior painting shall be thoroughly inspected. Any defects in the coating shall be repaired by the Contractor, as necessary, to restore the integrity of the paint system.

The Contractor is responsible for delivering the crane with all painted surfaces in good condition.

At the Government's contracted barge construction yard, all interior and exterior painting will be re-inspected. Any damaged areas of the coating due to damage in shipment, handling, installation or assembly, will be repaired by the crane manufacturer to restore the integrity of the paint system.

Major areas may have to be repainted by the crane manufacturer to provide uniform color to the last coating.

C415 DOORS, WINDOWS, HATCHES AND MANHOLES

A. DOORS

All doors and accompanying hardware, locks, keys, etc shall be the crane manufacturer's standard.

B. WINDOWS

All windows shall be ~~clear~~ safety glass. Windows shall be clear, except overhead windows, which shall be tinted. Windows shall provide good visibility to the boom point and the load at all times. Windshield wipers and defroster shall be installed on the cab front windows.

C. MANHOLES

Manufacturer standard access features shall be provided in the fuel oil day tank and hydraulic tank.

The top of the crane machinery space shall be provided with manufacturers standard access features, large enough to vertically remove the engine and major components.

C425 WALKWAYS AND RAILINGS

The crane shall be outfitted with the crane manufacturer's standard walkways and gratings throughout. The Little Rock District of the Corps of Engineers will install a walkway on top of the boom, after delivery, that will conform to USACE safety requirements. The crane manufacturer is not required to provide their standard walkway on the boom, but must consider it in their design.

C427 LADDERS

A ladder for access from the barge deck to the crane is required. Ladders shall be provided as necessary to allow access to all areas of the crane for maintenance.

C430 DECK COVERING

Deck coverings shall be provided by the crane manufacturer in accordance with their standard practice for the crane in marine service.

C436 INSULATION

The machinery housing and the operator's cab shall be insulated in accordance with the standard practice of the crane manufacturer for marine service.

Piping shall be insulated to prevent condensation.

The exhaust pipe from the engine and any pipe that may present a temperature hazard shall be insulated.

C437 CAB FURNITURE AND FURNISHINGS

The crane shall be outfitted with the crane manufacturer's standard cab furniture and furnishings.

C460 NAMEPLATES, NOTICES AND MARKINGS

The Contractor shall fabricate and install nameplates, notices and markings as required. All such labels shall be the crane manufacturer's standard for marine service.

In addition to those required by the standards, the following shall be provided:

- "NO SMOKING" notices shall be placed at fuel oil fill stations and on the doorways to the machinery room.
- Machinery, valve and electrical equipment labels shall be as required by the standards.
- Hearing conservation warning signs shall be as required by the standards.

C470 ELECTRONICS, INSTRUMENTATION AND COMMUNICATION EQUIPMENT

Proven commercial instrumentation for monitoring and controlling the crane systems, configurations and operation, alarms and safety shut-down systems shall be provided, within easy reach of the operator seated in the cab. The instrumentation shall be lighted to be visible for night operation of the crane.

ANSI required safety equipment shall be provided.

~~The crane operation shall be controlled by basic lever control systems.~~ Controls for the hoists, boom luffing and crane swing ~~Swing control lever~~ shall return automatically to the neutral position. Each control function shall be clearly marked.

EMERGENCY STOP of the crane functions shall be provided.

Foot operated pedals shall be designed and fabricated so the operator's feet will not slip off.

The following shall be provided in the cab:

- Hydraulic circuit(s) pressure and temperature gauges.
- Engine cooling fluid temperature gauges.
- Engine fuel oil gauge with reserve warning.
- Wind speed ana~~e~~mometer.
- Boom angle/radius reach indicator.
- Load-moment indicator.
- Drum rotation indicators.
- Crane list inclination and crane trim inclination indicator.
- A loud hailer shall be provided with horn directed forward to sound from under the cab.

C500 SPECIAL FEATURES

C540 CRANE FEATURES AND PERFORMANCE

A. GENERAL

The crane shall be a standard proven commercially available diesel powered hydraulically operated lattice-boom crane, designed and fabricated for multipurpose heavy duty construction work, modified as needed to meet or exceed the performance characteristics and the requirements of this specification. The crane shall meet the design and fabrication requirements of Clause C003.

The crane shall be the manufacturer's standard unit for marine service. Such standard marine service may include but not be limited to:

- All exterior doors, openings and accesses to be weathertight
- Storage space in the cab for a Type III personal flotation device (in addition to the crane operating manual and crane load charts)
- Double continuous weld on all primary structure to improve strength, reduce vibration, and improve corrosion resistance
- Cab and machinery space to be constructed of welded steel in accordance with AWS
- Adequate access/walking/standing space all around each piece of machinery for maintenance (to be illustrated on the Machinery Arrangement drawing with all local equipment)
- Access to oil tanks shall be oil tight
- Robust boom design exceeding the design standards, which will provide years of life without fatigue, when experiencing dynamic loading due to the floating platform
- Insulate and jacket the engine exhaust pipes for noise abatement and safety

B. POWER

The crane shall be capable of operating completely on its own diesel power.

The slewing, boom luffing, and hoisting drives shall be independent. The crane shall be capable of slewing, luffing and hoisting at the same time.

Use of hydraulic oil that is environmentally friendly is desirable. The lowest maximum operating hydraulic pressure is desirable.

C. SWING MECHANISM

The swing mechanism shall have sufficient power to rotate the crane for all rated loads and boom radii, including:

- Capability to swing up hill with a maximum adverse 3 degree crane list.
- Slewing speed of 2 minutes per revolution or better in the horizontal platform mode, with variable speed control, and with smooth start and stop.
- Positive swing locking capability in both directions.
- Upon return of the swing control ~~lever~~ to the center (neutral) position, the braking device shall not engage in a manner to abruptly arrest the swing motion; the automatic swing brake must be capable of a controlled smooth deceleration to a stop.

D. MAIN HOIST

1. Fully Revolving Lift

The crane main hoist shall be capable of making the following fully revolving, below the hook lifts (lift weights include all rigging below the hook) with an approximate 160-foot boom limited to 3 degree machine list:

LIFT (LBS)	BEYOND BARGE SIDE	BEYOND BARGE BOW
37,940	115'	~~55~~ 102'
68,000	68'	66'
74,000	80'	78'
76,000	71'	69'
89,000	50'	39'
96,000	62'	11'
110,000	51'	11'

(NOTE: The center of rotation shall be located on the centerline of the barge at the bow. Distance to the bow shall be determined from the tailswing and allowing personnel access of 3' to the edge of the deck. The barge will be 70'-0" wide.)

Lift shall be possible in a 30 MPH wind.

The main hoist hook speed shall be 20 feet per minute or better. The main hoist shall have a positive locking device.

The braking device for the main hoist shall be capable of holding the rated load indefinitely without attention from the operator, and shall actuate automatically upon return of the control ~~lever~~ to the center (neutral) position.

There shall be power down capabilities on the load line.

There shall be sufficient hoist spooling to allow the hook to be lowered to 50-feet below the barge deck, with the boom point at the highest elevation, and still leave at least 5 wraps of cable on the drums.

2. Maximum Over Bow Lift

Additional crane lift capacity over the bow would maximize the utility of the crane for general lift service.

The crane manufacturer should present information on how much (if any) additional lift capacity can be provided for a non-slewing, over bow lift at outreach five feet beyond the headlog.

One degree machine list de-rating should be applied to this scenario.

Boom length can be reduced for this scenario. The crane manufacturer should identify what boom length, boom angle, and boom tip height would be provided to attain this maximum lift capability.

If the required boom construction, hoist reeving, and block size for this rating is different from the boom, hoist reeving and block size required for the fully revolving lift, the manufacturer should explain the differences clearly. Any additional costs associated with this feature should be quantified.

E. AUXILIARY HOIST

The standard auxiliary hook and ball shall have a capacity of at least 15 short tons. The auxiliary hook speed shall be 200 feet per minute or better. The single line pull shall be a minimum of 25,000 lbs.

The auxiliary hoist shall be capable of lifting 75,000 pounds minimum when provided with a larger block, and multiple reeving. The boom tip and the hoist shall incorporate provisions to accommodate this reeving.

The braking device for the auxiliary hoist shall be capable of holding the rated load indefinitely, without attention from the operator, and shall actuate automatically upon return of the control ~~lever~~ to the center (neutral) position.

There shall be power down capabilities, as well as free fall, on the auxiliary hoist line.

There shall be sufficient hoist spooling to allow the hook to be lowered to 50-feet below the barge deck, with the boom point at the highest elevation, and still leave at least 5 wraps of cable on the drums.

F. CRANE LOAD BLOCK

The main block shall be standard swivel single hook, of sufficient weight to prevent slack wire rope when the hoist drum is unwinding without load at maximum speed. This capability shall be provided throughout the entire range of hook travel, and including the 2-block position. The safe working load rating of the main block shall match the maximum rated lift of the crane, with a 160-foot boom and ~~0~~1 degree machine list.

The auxiliary hoist shall have a single line rigged to a standard swivel hook (but capable of being 3 parted) and ball of sufficient weight to prevent slack wire rope when the respective hoist drum is unwinding without load at maximum speed. This capability shall be provided throughout the entire range of hook travel, and including the 2-block position. The safe working load rating of the auxiliary block shall be ~~30 short tons~~ minimally the same as the 3 parted lifting capacity.

G. LOAD BLOCK FLEET ANGLES

Fleet angles between load blocks and boom tip sheaves may not exceed 1-1/2 degrees over the full range of load block travel.

H. SAFETY

All applicable safety systems required by the standards shall be provided. In particular, the following shall be provided:

- Anti two-block (upper limit) devices shall be provided on both the main hoist and auxiliary hoist that stops all hoisting functions and sets the hoist brakes to prevent the hoisting blocks from any contact with the boom.

- There shall be a boom hoisting disengaging device, to disengage the boom hoisting power when the boom reaches its highest angle. When the power disengages, the boom hoist shall automatically be restrained from lowering. A positive locking device shall be provided on the boom hoisting. Boom stops shall be of the shock absorbing bumper type.

- A load-moment indicator shall be provided in the crane cab. The indicator shall be capable of displaying at least four programmed load charts.

I. MISCELLANEOUS

All sheaves on the crane shall be mounted with anti-friction tapered roller bearings.

All lubricating points shall be accessible without need to remove guards, or other components.

It is desirable that all sheave diameters, hoisting drum widths and drum diameters be of the greatest size to increase rope life.

J. THIRD HOIST

A third hoist shall be provided. The wire from this hoist shall be brought out to the front of the crane and managed through fairleads, if necessary. The hoist shall be suitable for "snaking in" the load, as well as being used for pile driving. The third hoist shall have a high line speed and high wire capacity and be independent of all other machine functions. The single line pull shall be a minimum of 25,000 lbs.

C600 MACHINERY

C601 GENERAL REQUIREMENTS

The machinery systems shall include the engine, fuel oil and lube oil, hydraulic system, engine cooling, engine exhaust, fire detection and extinguishing, heating and ventilation.

All fluid fill points shall be located in areas that are easily accessible and will not collect fluid spills.

C625 DIESEL ENGINE

The diesel engine shall be battery started, locally and from the cab. The diesel shall be 4 stroke cycle, self contained unit, radiator cooled, mounted to the foundation in the machinery space. The crankcase shall be vented to the main deck.

The engine shall be sized to provide power for the crane drives in compliance with the crane performance requirements plus a 25% margin. The engine shall be provided with positive shut-off of the air intake to control runaway.

The engine shall be mounted on vibration dampeners or resilient mounts to reduce vibration and associated noise.

C630 FUEL OIL SYSTEM

The fuel day tank capacity shall be adequate for a ~~60~~ 24-hour continuous operation of the crane at 75% full power.

The fill connection for the fuel oil day tank shall be self-closing. The fill and vent pipes shall be provided with flame arrester and a method of spill containment.

No fuel oil heating system is required for the cold weather condition.

C635 LUBE OIL SYSTEM

Clean lube oil and storage for dirty lube oil shall be available from facilities on the barge.

C640 COOLING SYSTEMS

The engine shall be radiator cooled to the outside of the machinery space. Environmentally friendly cooling fluid is desirable.

C650 ENGINE EXHAUST SYSTEM

A dry-exhaust system shall be provided for the engine, with high attenuation, residential type spark-arresting muffler. The exhaust pipe and muffler shall be fabricated of stainless steel, and provided with a rain flap cover that closes automatically when not in use (i.e. counterweight).

The engine exhaust shall be located away from the crane operator's cab area, and bend to discharge in a direction away from the cab.

C677 FIRE DETECTION AND EXTINGUISHING SYSTEM

A fire detection and alarm system shall monitor the crane machinery space from the cab.

Portable fire extinguishers, type ABC, 10 lb. dry chemical shall be provided. As a minimum, two (2) fire extinguishers are required in the machinery space, and one (1) in the vicinity of the door of the cab.

C685 HEATING, AIR CONDITIONING AND VENTILATION

Electric heat, air-conditioning and mechanical ventilation is required for the cab. The system shall be thermostatically controlled, and sized to maintain 68^0 F when in use. For the purpose of sizing the equipment, ~~T~~the outside environmental conditions shall be taken ~~from ASHRE standards for the Pine Bluff, Arkansas area~~ as 10^0 F to 110^0 F.

C700 ELECTRICAL

C705 ELECTRICAL SYSTEM

The electrical power for the crane shall be provided from the barge. The Crane Contractor shall be responsible to provide and install a fully functioning electrical connection at the rotating ring allowing full continuous 360^0 rotation of the crane. The crane manufacturer shall provide the required power needs and wiring connection to the Government during the Engineering and Scheduling Phase of the contract. The Government shall provide a stationary power supply connection within the top of the foundation.

One duplex GFCI receptacle shall be installed in the cab; however not in front of the operator's chair, wired to provide 120 volt 15 amp AC current. A second similar GFCI receptacle shall be installed in the machinery space.

C730 LIGHTING

Interior lighting (in the machinery space and cab) and access lighting on external walkways shall be provided in accordance with the requirements of Clause C003.

A. CRANE BOOM FLOODLIGHTS

The floodlight system shall be mounted on the crane boom. The system shall consist of a sufficient number of floodlights (8 lights minimum) to illuminate the deck and load; 3 directed downward onto the deck from the upper works and 5 on the lower boom directed towards the load.

Each light shall be 500 watt, quartz halogen type, designed to resist shock and vibration. Each light shall be independently controlled from the panelboard located in the operator's cab. ~~Lights shall be 110/120VAC.~~

The electrical feeders to the floodlights shall be provided with waterproof connectors (male/female) throughout. These connector locations shall coincide with the crane boom connections, to facilitate adding and replacing boom length sections, without having to reroute the electric cable wires.

B. CRANE EMERGENCY LIGHTS

Two (2) watertight self-contained permanently mounted emergency lights shall be provided. One (1) light shall be located in the machinery space, and one (1) light shall be located in the cab. The emergency lights shall be battery powered to provide light for at least 30 minutes. These lights shall be automatically activated, automatically recharged, and shall be fitted with a manual on/off switch.

Additionally, there shall be two (2) watertight self-contained portable emergency lights provided. Each shall be located and mounted adjacent to the permanently mounted emergency lights. These lights shall be activated manually and be battery powered to provide at least 60 minutes of light.

The interior light for the cab shall be provided with a dimmer control for operation at night.

C800 SPARES

C801 GENERAL

The crane manufacturer shall include in each system's drawing, a PARTS LIST. The PARTS LIST shall identify and describe all system equipment components, indicating the equipment manufacturer, and the designation (model, series, etc.).

Although no spare parts are to be provided as a part of the Contract, the Contractor shall provide a list of recommended spare parts. The Government may purchase these parts by contract modification.

C803 TOOLS

For each equipment type, make and model, the crane manufacturer shall provide one complete set of the manufacturer's special tools, maintenance tools, and special adjustment tools and monitoring equipment.

The tools and "equipment" shall be stored in maintenance tool chests labeled with the equipment description on the outside.

THIS PAGE HAS BEEN LEFT INTENTIONALLY BLANK

B. CRANE DESIRABLE FEATURES

The Offeror shall submit with his Proposal, complete information on the desirable features outlined in the Specification, Section C.

As a minimum, the following crane particulars must be addressed:

- Engine horsepower
- Engine rated RPM @ max. HP
- Diameter and flange depth of all drums
- Flange depths of hoist drums
- Width of hoist drums
- Hydraulic system operating pressure
- Is the hydraulic fluid cooled by a dedicated system?
- Is the hydraulic fluid environmentally friendly?
- Is the engine cooling fluid environmentally friendly?
- Is cooling air exhaust directed from the machinery space to the outside?
- What marine features (as noted in Clause C540.A) are included?
- Describe the "positive locking method" being used for the swing mechanism, main hoist and boom hoisting
- Does the crane require "assembly" (positioning of the mast or A frame) from stowed to the operating configuration? In the affirmative, is the positioning automatically controlled by hydraulics?

C. CRANE GENERAL ARRANGEMENT

The Offeror shall include in his Proposal, a Conceptual Drawing representing the General Arrangement of the Cab and Machinery Space of the proposed crane.

The arrangement of the cab shall include the detail of the operator chair and the position of the crane controls with their functions labeled.

The drawing(s) shall list major mechanical and electric system components, indicating equipment designation, vendor source, and model.

D. CRANE OPERATION

The Offeror shall include in his Proposal, a brief narrative describing the crane operation, with a detailed description of the controls provided for the crane functions.

A load chart indicating crane capacity, as a function of all possible reach radii shall be provided, for all boom lengths at ratings of 0^{o}, 1^{o}, 2^{o} and 3^{o} machine lists.