

<b>SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS</b> <i>OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, AND 30</i>				1. REQUISITION NUMBER SEE SCHEDULE		PAGE 1 OF 28			
2. CONTRACT NO. GS-06F-0036L		3. AWARD/EFFECTIVE DATE 10-Jan-2006		4. ORDER NUMBER W911RQ-06-F-0016		5. SOLICITATION NUMBER		6. SOLICITATION ISSUE DATE	
7. FOR SOLICITATION INFORMATION CALL:		a. NAME				b. TELEPHONE NUMBER (No Collect Calls)		8. OFFER DUE DATE/LOCAL TIME	
9. ISSUED BY RED RIVER ARMY DEPOT DIRECTORATE FOR CONTRACTING 100 MAIN DRIVE BUILDING 431 TEXARKANA TX 75507-5000  TEL: FAX:		CODE W911RQ		10. THIS ACQUISITION IS <input checked="" type="checkbox"/> UNRESTRICTED <input type="checkbox"/> SET ASIDE: % FOR <input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> HUBZONE SMALL BUSINESS <input type="checkbox"/> 8(A)  NAICS: SIZE STANDARD:		11. DELIVERY FOR FOB DESTINATION UNLESS BLOCK IS MARKED <input type="checkbox"/> SEE SCHEDULE  <input type="checkbox"/> 13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700)  13b. RATING  14. METHOD OF SOLICITATION <input type="checkbox"/> RFQ <input type="checkbox"/> IFB <input type="checkbox"/> RFP		12. DISCOUNT TERMS Net 30 Days	
15. DELIVER TO RED RIVER ARMY DEPOT DARLENE PHELPS XR CONSOL PROP OFF DDRT BLDG 499 10TH STREET AND K AVENUE TEXARKANA TX 75507-5000		CODE W911RQ		16. ADMINISTERED BY CHARLIE D. HARRIS, JR PHONE: 903-334-2218 FAX: 903-334-4141 CDHARRIS@REDRIVER-EX.ARMY.MIL TEXARKANA TX 75507-5000		CODE W911RQ			
17a. CONTRACTOR/ OFFEROR DK ENTERPRISE INC DWIGHT WILLIAMS 211 RANKIN ST FAYETTEVILLE NC 28301  TEL. (910) 480-0155		CODE 00P07		18a. PAYMENT WILL BE MADE BY DFAS - ROCK ISLAND OPERATING LOCATION ATTN: DFAS-RI-FPV BLDG 68 ROCK ISLAND IL 61299-8300		CODE HQ0303			
<input type="checkbox"/> 17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER		<input type="checkbox"/> 18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a. UNLESS BLOCK BELOW IS CHECKED <input type="checkbox"/> SEE ADDENDUM							
19. ITEM NO.		20. SCHEDULE OF SUPPLIES/ SERVICES			21. QUANTITY		22. UNIT	23. UNIT PRICE	24. AMOUNT
		<b>SEE SCHEDULE</b>							
25. ACCOUNTING AND APPROPRIATION DATA  <b>See Schedule</b>						26. TOTAL AWARD AMOUNT (For Govt. Use Only)  <b>\$175,113.60</b>			
<input type="checkbox"/> 27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4, FAR 52.212-3, 52.212-5 ARE ATTACHED.						ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED			
<input type="checkbox"/> 27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4, FAR 52.212-5 IS ATTACHED.						ADDENDA <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED			
28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED HEREIN.				COPIES		29. AWARD OF CONTRACT: REFERENCE <input type="checkbox"/> OFFER DATED . YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS:			
30a. SIGNATURE OF OFFEROR/CONTRACTOR				31a. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER)			31c. DATE SIGNED		
							11-Jan-2006		
30b. NAME AND TITLE OF SIGNER (TYPE OR PRINT)		30c. DATE SIGNED		31b. NAME OF CONTRACTING OFFICER (TYPE OR PRINT) DONALD E. KENNEDY / CONTRACTING OFFICER TEL: 903-334-2656 EMAIL: donald.kennedy1@us.army.mil					

**SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS  
(CONTINUED)**

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/ SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
<p><b>SEE SCHEDULE</b></p>					

32a. QUANTITY IN COLUMN 21 HAS BEEN  
 RECEIVED  INSPECTED  ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED: \_\_\_\_\_

32b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE	32c. DATE	32d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE
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32e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE	32f. TELEPHONE NUMBER OF AUTHORIZED GOVERNMENT REPRESENTATIVE
	32g. E-MAIL OF AUTHORIZED GOVERNMENT REPRESENTATIVE

33. SHIP NUMBER <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL	34. VOUCHER NUMBER	35. AMOUNT VERIFIED CORRECT FOR	36. PAYMENT <input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL	37. CHECK NUMBER
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38. S/R ACCOUNT NUMBER	39. S/R VOUCHER NUMBER	40. PAID BY
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41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT	42a. RECEIVED BY <i>(Print)</i>		
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER	41c. DATE	42b. RECEIVED AT <i>(Location)</i>	
		42c. DATE REC'D <i>(YY/MM/DD)</i>	42d. TOTAL CONTAINERS

## Section SF 1449 - CONTINUATION SHEET

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001	5 TON BRIDGE CRANE FFP CLASS C, UNDER HUNG, ELECTIRC POWERED, FREE STANDING, SINGLE GIRDER, WITH BRIDGE, TRUCKS, BRIDGE DRIVE, MOTORS, RADIO CONTROLS, SEE SPECIFICATION SHEET. NSN: 395000X056199 MILSTRIP: W45G1853071511 PURCHASE REQUEST NUMBER: W45G1853071511	1	Each	\$21,960.00	\$21,960.00

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NET AMT	\$21,960.00
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ACRN AA Funded Amount	\$21,960.00
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FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0002	5 TON RUNWAY SYSTEM FFP 69 ft. runway system with sister columns, mechanical rail splice SEE SPECIFICATION SHEET. NSN: 395000X056199 MILSTRIP: W45G1853071511 PURCHASE REQUEST NUMBER: W45G1853071511	1	Each	\$20,517.90	\$20,517.90

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NET AMT	\$20,517.90
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ACRN AA Funded Amount	\$20,517.90
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FOB: Destination

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0003	10 TON BRIDGE CRANE FFP CLASS C, TOP RUNNING TYPE ELECTIC POWERED, UNDER HUNG, WITH BRIDGE, TRUCKS, BRIDGE DRIVE, COMPLETED WITH MOTORS, RADIO CONTROLS, SEE SPECIFICATION SHEET NSN: 395000X056198 MILSTRIP: W45G1853057097 PURCHASE REQUEST NUMBER: W45G1853057097	3	Each	\$44,211.90	\$132,635.70

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NET AMT	\$132,635.70
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ACRN AB Funded Amount	\$132,635.70
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FOB: Destination

#### INSPECTION AND ACCEPTANCE TERMS

Supplies/services will be inspected/accepted at:

CLIN	INSPECT AT	INSPECT BY	ACCEPT AT	ACCEPT BY
0001	Destination	Government	Destination	Government
0002	Destination	Government	Destination	Government
0003	Destination	Government	Destination	Government

#### DELIVERY INFORMATION

CLIN	DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	UIC
0001	02-MAR-2006	1	RED RIVER ARMY DEPOT DARLENE PHELPS XR CONSOL PROP OFF DDRT BLDG 499 10TH STREET AND K AVENUE TEXARKANA TX 75507-5000 903-334-3818 FOB: Destination	W911RQ
0002	02-MAR-2006	1	(SAME AS PREVIOUS LOCATION) FOB: Destination	W911RQ

0003 02-MAR-2006 3 (SAME AS PREVIOUS LOCATION) W911RQ  
FOB: Destination

## ACCOUNTING AND APPROPRIATION DATA

AA: 97X4930.AAPP6D0000 31EA5TC000W45G1853071511Z949F9041117  
AMOUNT: \$20,517.90

AA: 97X4930.AAPP6D0000 31EA5TC000W45G1853071511Z949F9041117  
COST 000000000000  
CODE:  
AMOUNT: \$21,960.00

AB: 97X4930.AAPP6D0000 31EA5TC000W45G1853057097Z94960041117  
COST 000000000000  
CODE:  
AMOUNT: \$132,635.70

## CLAUSES INCORPORATED BY FULL TEXT

### 52.242-4003 PERSON TO CONTACT AFTER AWARD

NAME: Charlie D. Harris Jr.  
TELEPHONE: (903) 334-2218  
E-MAIL: cdharris@redriver-ex.army.mil

### 52.00-4050 ADDITIONAL INSTRUCTIONS, CONDITIONS AND NOTICES TO OFFERORS

## SPECIFICATION

### FOR CLASS C

## **BRIDGE CRANE, UNDERHUNG, ELECTRIC POWERED, FREE STANDING 5-TON CAPACITY, BLDG S-337, Shop A**

### 1. SCOPE.

1.1. Scope. This specification covers the requirements for an electric powered, free standing, under hung bridge, single girder crane, 5-Ton capacity, with bridge, trucks, bridge

drive, complete with motors, controls, and pushbutton pendant and remote control units for assembly and installation by the Government.

1.2. Omissions from Specifications. All materials necessary to provide a complete and useable piece of equipment shall be furnished even though not specifically covered by this specification.

1.3. Intended Use. The bridge crane will be used for HEMTT reject repairs.

## 2. APPLICABLE DOCUMENTS.

2.1. The following documents of the issue in effect on date of invitation for bids, form a part of this specification:

### SPECIFICATIONS

#### Federal

RR-W-410E Wire Rope and Strand

ASTM-D295-1999 Varnish, Moisture and Fungus-Resistant, for the Treatment  
of Communications, electronic, and Associated Electrical  
Equipment.

SAE-AS-3541 Fittings, Lubrication (Hydraulic).

### STANDARDS

#### Military

MIL-STD-129 Marking for Shipment and Storage

MIL-STD-130K Identification of Marking of U.S. Military Property

2.2. Other Publications. The following documents form a part of this specification. The issue in effect on date of invitation for bids shall apply.

Occupational Safety and Health Standards

National Bureau of Standards

FED-STD-H 28      Screw Thread Standards for Federal Services

National Fire Protection Association

JIS-C-0070

Crane Manufacturer's Association of America

CMAA 70      Specifications for Electric Overhead Traveling Cranes

American Society for Testing and Materials (ASTM)

A 36      Structural Steel

B 63      Resistivity of Metallically Conducting Resistance and  
Materials.

Contact

American Welding Society

The current edition of the welding handbook.

National Electrical Manufacturers' Association (NEMA)

ICS-1      INDUSTRIAL CONTROLS

MG-1      MOTORS AND GENERATORS.

SG-3      LOW VOLTAGE POWER CIRCUIT BREAKERS.

UNIFORM CLASSIFICATION COMMITTEE (UCC).

Uniform Freight Classification Rules.

American Society for Mechanical Engineers

ASME-HST4-1999      Hoists, Wire Roper, Electric Powered

ASME B 15.1  
Equipment

Safety Code for Mechanical Power Transmission

ASME B 30.2

Cranes, Overhead and Gantry

### 3. REQUIREMENTS.

3.1 General. The equipment to be furnished under this specification shall be constructed to handle a live load of 5-tons (10,000 pounds) plus 25% shock load with a factor of safety not less than five (5). All structural shapes shall meet the requirements of the A.I.S.C. Manual of Steel Construction. The overall performance shall meet or exceed the requirements of the American National Standards Institute for Cranes, Derricks, and Hoists. The equipment furnished shall meet or exceed specifications of the Electric Overhead Crane Institute and conform to all OSHA regulations governing this type of equipment. The equipment furnished shall be suitable for inside service.

3.2. Specific. The free-standing crane and hoist shall be designed to meet the following conditions and building dimensions:

a. Rated Hoisting Capacity	5-Tons
b. Span - Centerline to Center line Runway rails	16 Feet, 2 Inches
c. Rail Size-Width	2" min
d. Minimum Lift of Hook	11 foot, 8 Inches
e. Electric Power Available	460/230V, 3ph, 60 Cycle
f. Control Point for Pendant control	It is recommended that the pendant hang at a 4'0" distance from the floor.
g. Control Point for Remote	Hand Held
h. Controller Location	Attached to Bridge Control Box
i. Bridge Speed	110/36 FPM
j. Hoist Speed	14/4.6 FPM

k. Trolley Speed	60/200 FPM
l. Service	Indoor-Intermittent
m. Runway length	69 feet.
n. Runway structure	Runway to the floor shall be supported by equally spaced columns on each side of the runway. The structure shall be supported by columns that are X braced to ensure longitudinal stability. Overhead column braced to insure lateral stability.

### 3.3. Description.

3.3.1. Overhead Traveling Crane. The crane shall be a single girder traveling, free standing crane equipped with a under hung bridge, consisting of one (1) or more wheel mounted bridge girders. The bridge crane will be operated by a pendant push button control station and a remote operational controller. The crane shall employ electrical and mechanical drives for all the motions of the bridge travel, using pendant motor controls and remote radio operation. The crane shall integrally include traveling bridge, end trucks, wiring, pendant pushbutton control, remote radio controller operation, bridge conductor system, bridge bumpers/stops, limit switches for bridge, crane runway current collectors on one end truck, and complete operating and servicing instructions.

3.4. Material. Except as otherwise specified herein or in the referenced documents of Section 2, material shall be in accordance with best commercial practice. The main crane structure is ASTM designated A 36 steel, or a high carbon steel with like design characteristics. Contact between dissimilar metals, especially brass, copper, or steel in contact with aluminum or magnesium shall be avoided throughout the integral crane conductor system. All material used in the fabrication of the integral overhead travelling crane shall be new and possess physical and chemical characteristics that shall assure, on their proper application/use, a reliable and safe operable craneway with a 5-ton load handling capacity.

3.4.1. Castings and Forgings. All castings shall be sound and free from patching, misplaced coring, warping, blowholes, porosity, cracks, or other defects which might render them unsound for use. Forgings shall be free from scale, inclosures, cold shuts, and other defects which might render them unsound for use. Strength and other essential physical and chemical properties of the castings and forgings shall be adequate to meet the requirements specified herein.

3.5. Construction. The integral overhead travelling crane shall be free from any construction characteristics or defects that shall prevent them from passing the examination and test requirements of Section 4 of this Specification. No processes shall be used for reclaiming any components/parts. All surfaces of all components/parts shall be clean and free from sharp edges. All screws, bolts, nuts, pins, latches, and similar parts shall be installed to prevent unintentional loss of tightness or release. Components/parts subject to adjustment or removal shall not be swaged, peened, staked, or otherwise permanently deformed. The crane shall be furnished with all the necessary materials to construct a free standing system which is not supported by any part of the building in which the crane is to be installed.

3.5.1 Welding. The surface of parts to be welded shall be free from rust, scale, paint, grease, or other foreign matter. Spot or tack welds for strength shall not be used. Weld penetration shall be such as to provide transference of maximum design stress through the base metal juncture. Fillet welds shall be made where necessary to reduce stress concentration.

3.5.1.1. Fabricated Parts and Components. Parts and components fabricated by welding shall be free from discontinuities, cracks, welding undercuts, weld spatter, and any other impairing defects. Starts and finish of hand and automatic welds shall be uniform. End weld metal shall be feathered into the base metal of the parts being connected.

3.5.2. Bolted Connections. All bolt holes shall be accurately punched or drilled and shall have the burrs removed. Mating surfaces shall be smooth and parallel, and matching holes shall be concentric. All bolts, nuts, and screws shall be secure. Washers and lockwashers shall be provided suitable to the service required.

3.5.3. Electrical Connections. Connections of conductors and terminal parts shall be of, or a combination of, the screw, solder, pressure/compression type. When soldered connections are used, the conductors and terminal parts shall be mechanically secured before soldering. Resin core fluxes only shall be used in soldering operations. Connections to screw type terminals shall be mechanically secured with a means to prevent loss of tightness.

3.5.4. Interchangeability. All parts, components, and sub-assemblies described in this specification; shall be manufactured to such standards as to permit replacement or adjustment without modification of parts or equipment.

3.5.5. Accessibility. All parts, components, and sub-assemblies described in this specification, subject to wear, breakage, or distortion, and all such which require periodic maintenance, service and inspection; shall be accessible for adjustment, service, and maintenance without the need for special tools or equipment.

3.5.6. Lubrication. Lubrication means shall be provided for all moving parts requiring lubrication. Hydraulic lubrication fitting shall be in accordance with SAE-AS-3541. Pressure lubrication fittings shall not be used where normal lubrication pressure may damage grease seals or other parts, unless an effective pressure relief feature is provided. The crane shall be lubricated prior to delivery with lubricants designated for use in the 32 degrees F to 150 degrees F ambient temperature range. The end trucks shall be conspicuously tagged to identify the lubricants and their temperature range. Enclosed reduction gearing and automatic mechanical load-lowering brakes shall be lubricated in an oil bath, and provided with means for checking the oil level, filling, and draining. Drip pans or other positive means shall be provided where required, to prevent dripping over working areas. No lubricant shall be permitted to contact motor windings. Exposed bearings shall be fitted with dust-tight seals. One point lubrication shall be provided at each end of bridge.

3.5.7. Threads. All threads used in the construction of the overhead travelling crane and associated equipment, components, and parts shall be in the inch system and shall conform to NBS Handbook H 28.

3.5.8. Gears. All gears used in the construction of the overhead travelling crane and associated equipment, components, and parts shall be machined in the inch system and shall conform, where applicable to the AMGA Standards and ASA B 6.6.

3.5.9. Cleaning, Treatment, and Painting. All parts of the crane and conductor system components, except the hook, normally painted in good commercial practice shall be cleaned, treated, and painted in accordance with the manufacturer's standard practice as application to the type of equipment and service.

3.5.10. Marking for Identification. The crane assembly shall be marked for identification in accordance with MIL-STD-130. The plate shall be of copper-base alloy.

3.5.11. Instruction Plate. The pendant control shall be equipped with an instruction plate, including such warnings and cautions as may be required for normal operation, and describing any special or important procedures to be followed in operating and servicing the crane. The plate shall be of copper-base alloy.

3.5.12. Workmanship. Workmanship shall be first class to assure procurement of good quality equipment of neat general appearance, and shall conform with the best accepted commercial practice for overhead travelling cranes and associated runway conductor system components.

3.5.13. Safety. The overhead travelling crane assembly shall be equipped with safety devices as required by ASME B15.1, ASME B 30.2 and the Occupational Safety and Health Standards. Safety devices shall be provided on the crane conductor system components to preclude the hazard of electrical shock to operating and maintenance personnel.

3.5.14. Technical Handbook. Three (3) copies of instruction handbooks shall be furnished as part of this specification. Two (2) copies shall accompany the equipment to its destination. The other copy shall be forwarded by mail to: Contracting Officer, ATTN: Production Engineering Division, ASTMA-RR-ME, Red River Army Depot, Texarkana, TX 75507-5000.

These handbooks shall contain the following: Instructions for the assembly, installation, care, and operation of all parts of the crane, including lubrication charts, parts lists, and complete operating, maintenance, and adjusting instructions for all electrical controls.

3.6. Structural Design. The overhead travelling crane elements considered to be structural for design purposes shall be bridge, walkway, cab, end ties, end trucks, bumpers, stops, trolley frame, truck rocker pins, wind and other locks, trolley rails, stairs, and ladders - as applicable.

3.6.1. Structural Loading. The structural elements shall be designed with a factor of safety of 5 based on the ultimate strength for a design load combination of dead, hook, and impact, and the lateral and longitudinal horizontal forces.

3.7. Mechanical Design. The mechanical equipment on the overhead travelling crane shall be fully capable of operating the crane in conjunction with the motors under capacity load and at the speeds specified herein, with ease, safety, and minimum noise and vibration. All parts shall be constructed so that they may be easily assembled, adjusted, and repaired. Motors, gearcase, brakes, and bearing blocks carrying thrust or torque-produced forces shall be mounted on planed surfaces and securely held in alignment by suitable fixed or adjustable means. Crane elements considered to be mechanical for design purposes shall be drums, sheaves, wheels, couplings, brakes, shafts, axles, bearings, gears, hooks, sheave pins, blocks, and wire rope - as applicable. The mechanical elements shall be designed with a factor of safety of not less than 5 for a design load combination of dead and hook loads.

3.7.1. Bridge and End Trucks. The crane bridge shall be designed to be supported by top running end trucks aligned to operate on runway rails having a span of 16 foot, 2 inches from center to center of the rails. Provisions shall be made for the use of current collectors interchangeable on either end truck at one end of the bridge. Outriggers shall be designed to maintain the bridge in operating position, and shall be installed to allow hook approaches of at least 6 feet 0 inches at ends of the runway. If the hoist trolley is to be beam flange tracking then such flanges shall be prepared as running surfaces to fit the wheels of the hoist trolley. The bridge shall be fitted with squaring shafts and guides, outriggers, and electrical conductor system, limit switches, and all attachments necessary for dependable performance. The end trucks shall be provided with anti-friction bearing wheels, designed to operate on the Government's elevated top running craneway. No jack-shaft open gear reduction will be acceptable either at the wheel or bridge drive assembly. All gearing shall be enclosed in a self-contained and oil-tight gear case. Spring bumpers designed to safely stop the bridge with loaded hoist in the event of limit switch failure, shall be provided on the end trucks and shall be aligned for use in both directions with the runway rails. Stops with bumpers shall be provided at each end of the bridge to stop the trolley at the maximum safe limit of travel for the trolley. Provision shall be made for sectional disassembly of the bridge to facilitate shipping.

3.7.2. Hoist and Trolley. In addition to the requirements listed in paragraph 3.2., the hoist and trolley shall conform to the following:

- a. Rope drums right and left grooved for true vertical lift.
- b. Wire rope to be in accordance with Federal Specification RR-W-410E.
- c. The reach of the strain lead shall provide support for the pendant push-button control unit.
- d. Equipment shall be furnished with upper and lower lift limit switches.
- e. Equipment shall be furnished with trolley current collectors designed to operate in conjunction with the bridge conductor system.

3.7.3. Load Hook. A heat treated, drop forged steel, safety hoist hook with a swivel eye to offset turning effect on the hook as load is applied, shall be provided.

3.8. Electrical Design. Design criteria and rating standards for electrical components covered in this specification shall be in accordance, where applicable, to the documents referenced in Section 2.

3.8.1. Crane Electrification. The crane assembly shall be designed for operation on 230/460 volts, 3 phase, 60 cycle, electrical power. Motors, motor brakes, controllers, resistors, protections, wiring, current collectors, and limit switches shall be in accordance with the applicable documents listed in 3.8, above. The pendant control casing, if of metal, shall be suitably grounded. The crane bridge shall be provided with a complete conductivity system interconnecting the runway current collectors with the pendant control, the bridge truck motor(s). Bridge conductors shall be the festooned type. Festooned type connector shall be rope stranded flexible, insulated, portable cable and conforming to NEMA WC3. One end truck shall be provided with current collectors. The crane manufacturer shall provide the entire runway electrification system (69 feet).

3.8.1.1. Motors. Motors shall be single speed or variable speed, squirrel cage or slip rings, and geared for the full speed motions specified in paragraph 3.2. of this specification. Motors shall be of sufficient size for the duty to be performed and shall not exceed the full load rating when the driven equipment is operating at specified capacity. All motors shall be 230/460 volt, 60 cycles, AC. The crane shall be initially wired to run on 460 volts. All motors shall be capable of operating continuously for thirty (30) minutes under the full rated load with a temperature rise in accordance with latest NEMA Standards.

3.8.1.2. Motor Controls. Each motor shall be provided with a suitable controller conforming to latest NEMA Standards for this type equipment. The bridge traversing magnetic controller shall be located in a enclosure mounted on the side of a bridge girder. This panel shall also include the mainline safety disconnect switch and mainline contactor. The service disconnect must be in the "OFF" position before the hinged panel cover can be opened. Overload protection will be provided by automatic reset thermal overload relays.

3.8.1.3. Motion Controls. Operation of all motions of the equipment will be from a pushbutton station suspended from the crane trolley with the bottom within four (4) feet of the floor. There will be only one (1) button for each direction of electrically operated motion of the crane. Pushing a button part way in will produce the slowest speed, and further depression will increase the speed. Buttons will automatically return to the "OFF" position when pressure on them is released. Pushbuttons shall be legible and permanently marked and they shall be marked and arranged as follows from top to bottom: STOP; RESET; TROLLEY RIGHT; TROLLEY LEFT. Low voltage (110V) at the pushbuttons will be provided by an insulating transformer that provides low voltage for the magnetic contactor coils. The operating voltage for the motors will be handled by the magnetic contactors and will not be carried by the pushbuttons. A ground wire within a single multi-conductor cable for the control circuits shall be provided. For additional safety and convenience, a mainline contactor and mainline safety disconnect switch shall be provided to permit complete power shutoff for the crane electrical system. The mainline contactor shall be operated by the "STOP" and "RESET" buttons. All electrically controlled brakes shall be set automatically by interruption of the power supply. Interlocks shall be

provided to prevent direct reversing of any motion without first braking, and bringing to a stop the previous motion.

3.8.2. Crane Current Collectors. Each current collector shall be an integral assembly consisting of a non-burn moulded nylon collector shoe, fitted with a lubricant-impregnated copper contact brush, aluminum clevis assembly, collector arm and bracket assembly, cadmium plated steel tension spring, and bolts.

3.9 Remote Radio Control. Furnish one (1) each Remote Control Transmitter Gaffey, Inc. Model 21T23 and Remote Receiver Gaffey Model 21R14 or equal.

#### 4. QUALITY ASSURANCE PROVISIONS.

4.1. Inspection. The Government reserves the right to perform such inspections as deemed necessary to assure material and services conform to prescribed requirements.

4.2. Examination. Upon arrival at this depot, the equipment furnished shall be examined for design, dimensions, construction, materials, components, electrical equipment, and workmanship to determine compliance with requirements of this specification.

4.3. Equipment. All equipment furnished by the manufacturer shall be of first class workmanship and materials. Equipment with defects due to poor workmanship or materials shall be replaced by the manufacturer at no cost to the Government.

4.4. Warranty. The equipment furnished under this specification shall be guaranteed for a period of time equal to manufacturer's normal commercial warranty, or for a period of one (1) year, whichever is longer, against defective materials, design, and workmanship. Upon receipt of notice from the Government of failure of any part of the guaranteed equipment during the warranty period, that part or parts shall be replaced promptly with new parts by and at the expense of the manufacturer.

#### 5. PREPARATION FOR DELIVERY:

5.1. Loose Parts. Individual items, components, and parts to be assembled to the unit at installation and their mating pieces shall be identified by stencilling or by tags meeting the requirements of MIL-STD-129.

5.2. Preservation. Equipment shall be preserved in accordance with the supplier's standard practice.

5.3. Packing. The unit shall be packed in a manner which shall insure arrival at this depot in satisfactory condition and be acceptable to the carrier at lowest rates. Containers and packing shall comply with rules and regulations applicable to the mode of transportation.

5.4. Marking. Shipping containers shall be marked in accordance with MIL-STD-129.

## 6. SUBMITTAL DATA:

Each bidder is required to submit complete descriptive literature, drawings or photographs, and technical data covering the equipment he proposed to furnish, identifying the equipment by the name of the manufacturer and the model number. Lack of specific and complete information will be sufficient cause for rejection of bid(s). Where the bidder's product differs from the specific requirements, each point of difference should be clearly described. This requirement is set forth to facilitate the review of bids and is not to be construed by the bidder as waiving any of the requirements of the specification.

### SPECIFICATION

#### FOR CLASS C

### **BRIDGE CRANE, TOP RUNNING TYPE**

ELECTRIC POWERED,  
10-TON CAPACITY  
BLDG 345, LINE 1

#### 1. SCOPE.

1.1. Scope. This specification covers the requirements for an electric powered, top running, under hung bridge, single girder crane, 10-Ton capacity, with bridge, trucks, bridge drive, complete with motors, controls, and pushbutton pendant and remote control units for assembly and installation by the Government on craneway structure having 40 pound ASCE rails.

1.2. Omissions from Specifications. All materials necessary to provide a complete and useable piece of equipment shall be furnished even though not specifically covered by this specification.

1.3. Intended Use. The bridge crane will be used for the disassembly and assembly of heavy vehicles in existing shop buildings and on existing craneways.

#### 2. APPLICABLE DOCUMENTS.

2.1. The following documents of the issue in effect on date of invitation for bids, form a part of this specification:

### SPECIFICATIONS

Federal

RR-W-410E Wire Rope and Strand

of

ASTM-D295-1999 Varnish, Moisture and Fungus-Resistant, for the Treatment  
Communications, electronic, and Associated Electrical  
Equipment.

SAE-AS-3541 Fittings, Lubrication (Hydraulic).

## STANDARDS

Military

MIL-STD-129 Marking for Shipment and Storage

MIL-STD-130K Identification of Marking of U.S. Military Property

2.2. Other Publications. The following documents form a part of this specification. The issue in effect on date of invitation for bids shall apply.

Occupational Safety and Health StandardsNational Bureau of Standards

FED-STD-H 28 Screw Thread Standards for Federal Services

National Fire Protection Association

JIS-C-0070

Crane Manufacturer's Association of America

CMAA 70 Specifications for Electric Overhead Traveling Cranes

American Society for Testing and Materials (ASTM)

A 36 Structural Steel

B 63 Resistivity of Metallically Conducting Resistance and  
Materials.

Contact

American Welding Society

The current edition of the welding handbook.

National Electrical Manufacturers' Association (NEMA)

ICS-1	INDUSTRIAL CONTROLS
MG-1	MOTORS AND GENERATORS.
SG-3	LOW VOLTAGE POWER CIRCUIT BREAKERS.

UNIFORM CLASSIFICATION COMMITTEE (UCC).

Uniform Freight Classification Rules.

American Society for Mechanical Engineers

ASME-HST4-1999	Hoists, Wire Roper, Electric Powered
ASME B 15.1 Equipment	Safety Code for Mechanical Power Transmission
ASME B 30.2	Cranes, Overhead and Gantry

## 3. REQUIREMENTS.

3.1 General. The equipment to be furnished under this specification shall be constructed to handle a live load of 10-tons (20,000 pounds) plus 25% shock load with a factor of safety not less than five (5). All structural shapes shall meet the requirements of the A.I.S.C. Manual of Steel Construction. The overall performance shall meet or exceed the requirements of the American National Standards Institute for Cranes, Derricks, and Hoists. The equipment furnished shall meet or exceed specifications of the Electric Overhead Crane Institute and conform to all OSHA regulations governing this type of equipment. The equipment furnished shall be suitable for outside service.

3.2. Specific. The crane and hoist shall be designed to meet the following conditions and building dimensions:

a. Rated Hoisting Capacity	10-Tons
b. Span - Centerline to Center line Runway rails	21 Feet 5 1/4 Inches

c. Rail Size-Width	2"
d. Minimum Lift of Hook	24 feet 8 inches
e. Electric Power Available	480V, 3-PH, 60 Cycle
f. Control Point for Pendant control floor.	It is recommended that the pendant hangs at a 4'0" distance from the floor.  ( The distance from the floor to the top of the running rail is 24'8").
Control Point for Remote	Hand Held
g. Controller Location	Attached to Bridge Control Box
h. Bridge Speed	33/100 FPM
i. Hoist Speed	5/15 FPM
j. Trolley Speed	17/50 FPM
k. Service	Indoor-Intermittent
l. Clearance Rail Top to Obstruction	6'0"
m. Runway length	300feet.

### 3.3. Description.

3.3.1. Overhead Traveling Crane. The crane shall be a double girder traveling crane equipped with a top running end truck type, consisting of two (2) or more wheel mounted bridge girders capable of operating on the Government's elevated crane runway. The bridge crane will be operated by a pendant pushbutton control station and a remote operational controller. The crane shall employ electrical and mechanical drives for all the motions of the bridge travel, using pendant motor controls and remote radio operation. The crane shall integrally include traveling bridge, end trucks, wiring, pendant pushbutton control, remote radio controller operation, bridge conductor system, bridge bumpers/stops, limit switches for bridge, crane runway current collectors on one end truck, and complete operating and servicing instructions. The crane shall be furnished with a braking system that provides single-shoe or multiple disc-brakes for each drive motor. The brakes shall be spring applied and electronically released.

3.4 Material. Except as otherwise specified herein or in the referenced documents of Section 2, material shall be in accordance with best commercial practice. The main crane structure is ASTM designated A 36 steel, or a high carbon steel with like design characteristics. Flange surfaces of the crane structure which support the trolley wheel threads are hardened to a Brinell hardness number of 225. Contact between dissimilar metals, especially brass, copper, or steel in contact with aluminum or magnesium shall be avoided throughout the integral crane conductor system. All material used in the fabrication of the integral overhead travelling crane shall be new and possess physical and chemical characteristics that shall assure, on their proper application/use, a reliable and safe operable craneway with a 10-Ton load handling capacity.

3.4.1. Castings and Forgings. All castings shall be sound and free from patching, misplaced coring, warping, blowholes, porosity, cracks, or other defects which might render them unsound for use. Forgings shall be free from scale, inclosures, cold shuts, and other defects which might render them unsound for use. Strength and other essential physical and chemical properties of the castings and forgings shall be adequate to meet the requirements specified herein.

3.5. Construction. The integral overhead travelling crane shall be free from any construction characteristics or defects that shall prevent them from passing the examination and test requirements of Section 4 of this Specification. No processes shall be used for reclaiming any components/parts. All surfaces of all components/parts shall be clean and free from sharp edges. All screws, bolts, nuts, pins, latches, and similar parts shall be installed to prevent unintentional loss of tightness or release. Components/parts subject to adjustment or removal shall not be swaged, peened, staked, or otherwise permanently deformed.

3.5.1 Welding. The surface of parts to be welded shall be free from rust, scale, paint, grease, or other foreign matter. Spot or tack welds for strength shall not be used. Weld penetration shall be such as to provide transference of maximum design stress through the base metal juncture. Fillet welds shall be made where necessary to reduce stress concentration. Before assigning any welder to manual welding work, on the crane structure, the manufacturer shall certify to the contracting officer that the welder has passed the qualification tests as prescribed by either the American Welding Society or the American Society of Mechanical Engineers for the type of welding operation to be performed.

3.5.1.1. Fabricated Parts and Components. Parts and components fabricated by welding shall be free from discontinuities, cracks, welding undercuts, weld spatter, and any other impairing defects. Starts and finish of hand and automatic welds shall be uniform. End weld metal shall be feathered into the base metal of the parts being connected.

3.5.2. Bolted Connections. All bolt holes shall be accurately punched or drilled and shall have the burrs removed. Mating surfaces shall be smooth and parallel, and matching holes shall be concentric. All bolts, nuts, and screws shall be secure. Washers and lockwashers shall be provided suitable to the service required.

3.5.3. Electrical Connections. Connections of conductors and terminal parts shall be of, or a combination of, the screw, solder, pressure/compression type. When soldered connections are used, the conductors and terminal parts shall be mechanically secured before soldering. Resin core fluxes only shall be used in soldering operations. Connections to screw type terminals shall be mechanically secured with a means to prevent loss of tightness.

3.5.4. Interchangeability. All parts, components, and sub-assemblies described in this specification; shall be manufactured to such standards as to permit replacement or adjustment without modification of parts or equipment.

3.5.5. Accessibility. All parts, components, and sub-assemblies described in this specification, subject to wear, breakage, or distortion, and all such which require periodic maintenance, service and inspection; shall be accessible for adjustment, service, and maintenance without the need for special tools or equipment.

3.5.6. Lubrication. Lubrication means shall be provided for all moving parts requiring lubrication. Hydraulic lubrication fitting shall be in accordance with SAE-AS-3541. Pressure lubrication fittings shall not be used where normal lubrication pressure may damage grease seals or other parts, unless an effective pressure relief feature is provided. The crane shall be lubricated prior to delivery with lubricants designated for use in the 32 degrees F to 150 degrees F ambient temperature range. The end trucks shall be conspicuously tagged to identify the lubricants and their temperature range. Enclosed reduction gearing and automatic mechanical load-lowering brakes shall be lubricated in an oil bath, and provided with means for checking the oil level, filling, and draining. Drip pans or other positive means shall be provided where required, to prevent dripping over working areas. No lubricant shall be permitted to contact motor windings. Exposed bearings shall be fitted with dust-tight seals. One point lubrication shall be provided at each end of bridge.

3.5.7. Threads. All threads used in the construction of the overhead travelling crane and associated equipment, components, and parts shall be in the inch system and shall conform to NBS Handbook H 28.

3.5.8. Gears. All gears used in the construction of the overhead travelling crane and associated equipment, components, and parts shall be machined in the inch system and shall conform, where applicable to the AMGA Standards and ASA B 6.6.

3.5.9. Cleaning, Treatment, and Painting. All parts of the crane and conductor system components, except the hook, normally painted in good commercial practice shall be cleaned, treated, and painted in accordance with the manufacturer's standard practice as application to the type of equipment and service.

3.5.10 Marking for Identification. The crane assembly shall be marked for identification in accordance with MIL-STD-130. The plate shall be of copper-base alloy.

3.5.11 Instruction Plate. The pendant control shall be equipped with an instruction plate, including such warnings and cautions as may be required for normal operation, and describing any special or important procedures to be followed in operating and servicing the crane. The plate shall be of copper-base alloy.

3.5.12 Workmanship. Workmanship shall be first class to assure procurement of good quality equipment of neat general appearance, and shall conform with the best accepted commercial practice for overhead travelling cranes and associated runway conductor system components.

3.5.13. Safety. The overhead travelling crane assembly shall be equipped with safety devices as required by ASME B15.1, ASME B 30.2 and the Occupational Safety and Health Standards. Safety devices shall be provided on the crane conductor system components to preclude the hazard of electrical shock to operating and maintenance personnel.

3.5.14 Technical Handbook. Three (3) copies of instruction handbooks shall be furnished as part of this specification. Two (2) copies shall accompany the equipment to its destination. The other copy shall be forwarded by mail to: Contracting Officer, ATTN: Production Engineering Division, ASTMA-RR-ME, Red River Army Depot, Texarkana, TX 75507-5000.

These handbooks shall contain the following: Instructions for the assembly, installation, care, and operation of all parts of the crane, including lubrication charts, parts lists, and complete operating, maintenance, and adjusting instructions for all electrical controls.

3.6. Structural Design. The overhead travelling crane elements considered to be structural for design purposes shall be bridge, walkway, cab, end ties, end trucks, bumpers, stops, trolley frame, truck rocker pins, wind and other locks, trolley rails, stairs, and ladders - as applicable.

3.6.1. Structural Loading. The structural elements shall be designed with a factor of safety of 5 based on the ultimate strength for a design load combination of dead, hook, and impact, and the lateral and longitudinal horizontal forces.

3.7. Mechanical Design. The mechanical equipment on the overhead travelling crane shall be fully capable of operating the crane in conjunction with the motors under capacity load and at the speeds specified herein, with ease, safety, and minimum noise and vibration. All parts shall be constructed so that they may be easily assembled, adjusted, and repaired. Motors, gearcase, brakes, and bearing blocks carrying thrust or torque-produced forces shall be mounted on planed surfaces and securely held in alignment by suitable fixed or adjustable means. Crane elements considered to be mechanical for design purposes shall be drums, sheaves, wheels, couplings, brakes, shafts, axles, bearings, gears, hooks, sheave pins, blocks, and wire rope - as applicable. The mechanical elements shall be designed with a factor of safety of not less than 5 for a design load combination of dead and hook loads.

3.7.1 Bridge and End Trucks. The crane bridge shall be designed to be supported by top running end trucks aligned to operate on runway rails having a span of 21 foot, 5 1/4 inches from center to center of the rails. Provisions shall be made for the use of current collectors

interchangeable on either end truck at one end of the bridge. Outriggers shall be designed to maintain the bridge in operating position, and shall be installed to allow hook approaches of at least 6 feet 0 inches at ends of the runway. If the hoist trolley is to be beam flange tracking then such flanges shall be prepared as running surfaces to fit the wheels of the hoist trolley. The bridge shall be fitted with squaring shafts and guides, outriggers, and electrical conductor system, limit switches, and all attachments necessary for dependable performance. The end trucks shall be provided with anti-friction bearing wheels, designed to operate on the Government's elevated top running craneway. No jack-shaft open gear reduction will be acceptable either at the wheel or bridge drive assembly. All gearing shall be enclosed in a self-contained and oil-tight gear case. Spring bumpers designed to safely stop the bridge with loaded hoist in the event of limit switch failure, shall be provided on the end trucks and shall be aligned for use in both directions with the runway rails. Stops with bumpers shall be provided at each end of the bridge to stop the trolley at the maximum safe limit of travel for the trolley. Provision shall be made for sectional disassembly of the bridge to facilitate shipping.

3.7.2 Hoist and Trolley. In addition to the requirements listed in paragraph 3.2., the hoist and trolley shall conform to the following:

- a. Rope drums right and left grooved for true vertical lift.
- b. Wire rope to be in accordance with Federal Specification RR-W-410E, Type I, Class 3.
- c. Sheaves shall be cast steel, forged, rolled or welded structural steel. Sheaves grooved shall be accurately machined, smoothly finished, and free from surface defects.
- d. The reach of the strain lead shall provide support for the pendant push-button control unit.
- e. Equipment shall be furnished with upper and lower lift limit switches.
- f. Equipment shall be furnished with trolley current collectors designed to operate in conjunction with the bridge conductor system.
- g. Trolley. The trolley shall operate the full distance of the bridge. Brake operation shall be verified in each direction. The trolley shall be furnished with stops located at each end of the bridge girders.
- h. Hoist Brakes. Each hoist shall be furnished with a one holding brake. The holding brake shall be a friction brake of the shoe type design and shall be applied to the motor shaft or to the gear reduction shaft.
- i. Trolley Brakes. The trolley shall be furnished with a braking system. The braking system shall be equipped with shoe type or disc brakes that are spring applied and electronically released.

3.7.3 Load Hook. A heat treated, drop forged steel, safety hoist hook with a swivel eye to offset turning effect on the hook as load is applied, shall be provided. The hook shall be furnished with a safety latch designed to preclude inadvertent displacement of slings from the hook saddle. The hook shall be commercially rated and have a minimum proof load of twice the working load.

3.8. Electrical Design. Design criteria and rating standards for electrical components covered in this specification shall be in accordance, where applicable, to the documents referenced in Section 2.

3.8.1. Crane Electrification. The crane assembly shall be designed for operation on 230/ 460 volts, 3 phase, 60 cycle, electrical power. Motors, motor brakes, controllers, resistors, protections, wiring, current collectors, and limit switches shall be in accordance with the applicable documents listed in 3.8, above. The pendant control casing, if of metal, shall be suitably grounded. The crane bridge shall be provided with a complete conductory system interconnecting the runway current collectors with the pendant control, the bridge truck motor(s). Bridge conductors shall be the insulated figure "8" Duct-O-Bar type. One end truck shall be provided with current collectors. Furnish one (1) lot of runway Duct-O-Bar figure 8 electrification for the old crane runway.

3.8.1.1. Motors. Motors shall be single speed or variable speed, squirrel cage or slip rings, and geared for the full speed motions specified in paragraph 3.2. of this specification. Motors shall be of sufficient size for the duty to be performed and shall not exceed the full load rating when the driven equipment is operating at specified capacity. All motors shall be 480 volt, 60 cycle, A.C., and shall be wired to run on 480 volts. All motors shall be capable of operating continuously for thirty (30) minutes under the full rated load with a temperature rise in accordance with latest NEMA Standards.

3.8.1.2. Motor Controls. Each motor shall be provided with a suitable controller conforming to latest NEMA Standards for this type equipment. The bridge traversing magnetic controller shall be located in a enclosure mounted on the side of a bridge girder. This panel shall also include the mainline safety disconnect switch and mainline contactor. The service disconnect must be in the "OFF" position before the hinged panel cover can be opened. Overload protection will be provided by automatic reset thermal overload relays.

3.8.1.3. Motion Controls. Operation of all motions of the equipment will be from a pushbutton station suspended from the crane trolley with the bottom within four (4) feet of the floor. There will be only one (1) button for each direction of electrically operated motion of the crane. Pushing a button part way in will produce the slowest speed, and further depression will increase the speed. Buttons will automatically return to the "OFF" position when pressure on them is released. Pushbuttons shall be legible and permanently marked and they shall be marked and arranged as follows from top to bottom: STOP; RESET; BRIDGE FORWARD; BRIDGE REVERSE. Low voltage (110V) at the pushbuttons will be provided by an insulating transformer that provides low voltage for the magnetic contactor coils. The operating voltage for the motors will be handled by the magnetic contactors and will not be carried by the

pushbuttons. A ground wire within a single multi-conductor cable for the control circuits shall be provided. For additional safety and convenience, a mainline contactor and mainline safety disconnect switch shall be provided to permit complete power shutoff for the crane electrical system. The mainline contactor shall be operated by the "STOP" and "RESET" buttons. All electrically controlled brakes shall be set automatically by interruption of the power supply. Interlocks shall be provided to prevent direct reversing of any motion without first braking, and bringing to a stop the previous motion.

3.8.2. Crane Current Collectors. Each current collector shall be an integral assembly consisting of a non-burn moulded nylon collector shoe, fitted with a lubricant-impregnated copper contact brush, aluminum clevis assembly, collector arm and bracket assembly, cadmium plated steel tension spring, and bolts.

3.10 Remote Radio Control. Furnish one (1) each Remote Control Transmitter Gaffey, Inc. Model 21T23 and Remote Receiver Gaffey Model 21R14 or equal.

3.11 Optional Features. The following features are required to be provided with the crane.

- a. A full length walkway shall be provided off the drive girder.
- b. A service platform shall be provided off the idler girder.
- c. A warning device shall be provided that includes a bell to indicate movement of the bridge/trolley.

#### 4. QUALITY ASSURANCE PROVISIONS.

4.1 Inspection. The Government reserves the right to perform such inspections as deemed necessary to assure material and services conform to prescribed requirements.

4.2. Examination. Upon arrival at this depot, the equipment furnished shall be examined for design, dimensions, construction, materials, components, electrical equipment, and workmanship to determine compliance with requirements of this specification.

4.3. Equipment. All equipment furnished by the manufacturer shall be of first class workmanship and materials. Equipment with defects due to poor workmanship or materials shall be replaced by the manufacturer at no cost to the Government.

4.4. Warranty. The equipment furnished under this specification shall be guaranteed for a period of time equal to manufacturer's normal commercial warranty, or for a period of one (1) year, whichever is longer, against defective materials, design, and workmanship. Upon receipt of notice from the Government of failure of any part of the guaranteed equipment during the warranty period, that part or parts shall be replaced promptly with new parts by and at the expense of the manufacturer.

5. **PREPARATION FOR DELIVERY:**

5.1. **Loose Parts.** Individual items, components, and parts to be assembled to the unit at installation and their mating pieces shall be identified by stencilling or by tags meeting the requirements of MIL-STD-129.

5.2. **Preservation.** Equipment shall be preserved in accordance with the supplier's standard practice.

5.3. **Packing.** The unit shall be packed in a manner which shall insure arrival at this depot in satisfactory condition and be acceptable to the carrier at lowest rates. Containers and packing shall comply with rules and regulations applicable to the mode of transportation.

5.4. **Marking.** Shipping containers shall be marked in accordance with MIL-STD-129.

6. **SUBMITTAL DATA:**

Each bidder is required to submit complete descriptive literature, drawings or photographs, and technical data covering the equipment he proposed to furnish, identifying the equipment by the name of the manufacturer and the model number. Lack of specific and complete information will be sufficient cause for rejection of bid(s). Where the bidder's product differs from the specific requirements, each point of difference should be clearly described. This requirement is set forth to facilitate the review of bids and is not to be construed by the bidder as waiving any of the requirements of the specification.