



NAVFAC

Naval Facilities Engineering Command
NAVFAC FAR EAST

NAVFAC SPECIFICATION NO.:
CONSTRUCTION CONTRACT NO.:
APPROPRIATION:
W/O No.: CPWHH

REPLACE OVERHEAD BRIDGE CRANE HOIST/TROLLEY ASSEMBLIES
AT BLDG. 480, U.S. FLEET ACTIVITIES, SASEBO, JAPAN

SPECIFICATION AND DRAWINGS PREPARED BY:
DESIGN SECTION, PROJECT MANAGEMENT AND ENGINEERING BRANCH (PM&E)
FACILITIES ENGINEERING AND ACQUISITION DIVISION (FEAD), PWD SASEBO
NAVAL FACILITY ENGINEERING COMMAND, FAR EAST

Spec. Prepared By:	DATE	TECH SUPPORT TEAM:	DATE
M-KOGA		N/A	
CIVIL ENG. TEAM:	DATE	MECH. ENG. TEAM:	DATE
S-IWATSU		Y-FUJIYOSHI	
ARCH. ENG. TEAM:	DATE	ELECT. ENG. TEAM:	DATE
Y-MARUTA		K-KISU	
DESIGN SECTION MANAGER:			
T-TANAKA		DATE: _____	
PM&E BRANCH HEAD:			
G. M. KOERBER, P.E.		DATE: 4/8/10	



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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01 11 00

GENERAL PARAGRAPHS

PART 1 - GENERAL

1.1 GENERAL DESCRIPTION: This is a Design-Build (DB) project to "Replace Overhead Bridge Crane Hoist/Trolley Assemblies at Bldg. 480". The Contractor shall furnish labor, materials, equipment, transportation and supervision necessary to perform this project. The Contractor shall provide and secure this construction, complete and ready for use. The Contractor shall perform work required under this contract, as indicated in this document specification and attached documents.

1.1.1 Design: All design work shall be included in the contract price. The design shall fully accommodate usage requirements of the facilities, minimize interference with existing work, and be suitable for the site. All design work shall be in accordance with applicable criteria. Minimum technical requirement shall be as specified in Paragraph 2 "ENGINEERING SYSTEMS REQUIREMENTS." The Government shall not be responsible for any additional costs incurred by the Contractor which could have been avoided through an appropriate contractor's design.

1.1.2 Work Descriptions: The Government concept documents including specific requirements for this project have been prepared by Crane Design Division, Navy Crane Center (NCC), and these documents are attached to this Specifications by electronic files as specified in Paragraph 1.2.1, SECTION 01 11 10. Therefore, these documents shall be referred as detailed general requirements including work scopes, design requirements, requirements for test, inspection and acceptance, requirements for technical documentation, and administrative requirements.

a. In case of differences between the documents specified in Paragraph 1.2.1, SECTION 01 11 10 and this Specifications, this Specifications will govern to the extent of such differences. Otherwise, the documents specified in Paragraph 1.2.1, SECTION 01 11 10 will apply.

1.2 LOCATION: The work is located at Main Base Area, U.S. Fleet Activities Sasebo, Japan, approximately as shown.

1.3 COMPLETION DAYS: The Contractor shall be required to (a) commence work under this contract within five calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 360 calendar days after the date the Contractor receives the notice to proceed. The time stated for completion shall include final cleanup of the premises.

1.4 GOVERNMENT REPRESENTATIVES (REVISED):

a. The work will be under the general direction of an officer of the Civil Engineer Corps, United States Navy, or another officer or representative of the Government, designated in block 7 and block 26 of Standard Form 1442. Except in connection with the DISPUTES Clause of this contract, this designated person has complete charge of and exercise full supervision over the work so far as it affects the interests of the Government.

b. For the purposes of the DISPUTES Clause, the "Contracting Officer" is the Commander, Naval Facilities Engineering Command, or his representatives warranted for this purpose. Any claim submitted under the DISPUTES Clause shall be submitted to the Contracting Officer in care of the person designated in block 7 and block 26 of Standard Form 1442 as the representative of the Contracting Officer authorized to receive the claim.

c. The provisions of this paragraph or provisions elsewhere in this contract regarding supervision, approval, or direction by the Contracting Officer or the designated person shall not relieve the Contractor of responsibility for accomplishing the work, with regard to sufficiency or time of performance, except as otherwise provided.

1.5 CONCILIATION: If the parties to this contract by mutual consent, which consent shall be memorialized in writing, agree to use the United States - Japan Joint Committee as a means of alternative dispute resolution (ADR) in accord with the DISPUTES clause of this contract, then disagreement arising under this contract that is not yet resolved by the parties to this contract may be submitted to the United States - Japan Joint Committee for conciliation in accordance with paragraph 10, Article XVIII, of the Status of Forces Agreement under Article VI of the Treaty of Mutual Cooperation and Security between Japan and United States of America.

The decision of the United States - Japan Joint Committee shall be non-binding on the parties, and as such, the United States - Japan Joint Committee's consideration of a dispute shall not prejudice any right which the parties to the contract may have to file a civil suit with either the United States Armed Services Board of Contract Appeals or the United States Court of Federal Claims.

1.6 ORAL MODIFICATION: No oral statement by any person other than the Contracting Officer or his representative, as provided in the Contract Clause entitled "CHANGES", will in any manner or degree modify or otherwise affect the terms of this contract.

1.7 SUBMITTALS: Submit each data required in this DIVISION, "GENERAL REQUIREMENTS" in accordance with each applicable Paragraph.

1.8 INSURANCE:

1.8.1 Minimum Requirements: The Contractor shall procure and maintain during the entire period of performance under this contract the following minimum insurance coverage:

- a. Comprehensive general liability: ¥50,000,000 per occurrence.
- b. Automobile liability: ¥20,000,000 per person; ¥50,000,000 per occurrence for bodily injury, ¥2,000,000 per occurrence for property damage.
- c. Workman's compensation: as required by Japanese workers' compensation and occupational disease laws.
- d. Others as required by Japanese law.

1.8.2 Limited Assumption of Risk by the Government: Not applicable.

1.9 NO WAIVER BY THE GOVERNMENT: The failure of the Government in any one or more instances to insist upon strict performance to any of the terms of this contract or to exercise any option herein conferred shall not be construed as a waiver or relinquishment to any extent of the right to assert or rely upon such terms or option on any future occasion.

1.10 SCHEDULE OF PRICES:

1.10.1 Data Required: Within 15 days of receipt of a notice of award, submit for approval a schedule of prices on the forms furnished. The schedule of prices shall consist of a detailed breakdown of the contract price, giving the quantities for each of the various kinds of work; the unit prices; and the total prices thereof. The required schedule must be based on the actual breakdown of the bid price. The submission of the required data shall not otherwise affect the contract terms.

1.10.2 Submittal Instructions: Furnish one copy of the schedule of prices in accordance with the paragraph entitled "Data Required". Payments will not be made until the schedule of prices has been approved.

1.11 PAYMENTS TO THE CONTRACTOR: In compliance with the Contract Clause entitled "PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS", payments will be made upon submission of itemized requests by the Contractor and will be subject to reduction for overpayments or increase for underpayments on preceding payments to the Contractor.

1.11.1 Obligation of Government Payments: The obligation of the Government to make any of the payments required under any of the provisions of this contract shall, in the discretion of the Contracting Officer, be subject to:

- a. Reasonable deductions on account of defects in material or workmanship; and
- b. Any claims which the Government may have against the Contractor under this contract or in connection with this contract.

1.12 CONTRACTOR'S INVOICE AND CONTRACT PERFORMANCE STATEMENT: Request for payment in accordance with the terms of the contract shall consist of:

- a. The Contractor's invoice on the form furnished which shows in summary form the basis for arriving at the amount of the invoice.
- b. The contract performance statement on the form which shows in detail the estimated cost percentage of completion and value of completed performance (for each of the construction categories). The Contracting Officer will prescribe the format, content, and number of copies required. The submission of the required data will not otherwise affect the contract terms.

1.13 EQUITABLE ADJUSTMENTS - WAIVER AND RELEASE OF CLAIMS:

- a. Whenever the Contractor submits a claim for equitable adjustment under any clause of this Contract which provides for equitable adjustment of the Contract, such claim shall include all types of adjustments in the total amounts to which the clause entitles the Contractor, including, but not limited to, adjustments arising out of delays or disruptions or both caused by such change.
- b. Except as the parties may otherwise expressly agree, the Contractor shall be deemed to have waived (1) any adjustments to which it otherwise might be entitled under the clause where such claim fails to request such adjustments, and (2) any increase in the amount of equitable adjustments additional to those requested in its claim.
- c. The Contractor agrees that, if required by the Contracting Officer, he will execute a release, in form and substance satisfactory to the Contracting Officer, as part of the supplemental agreement setting forth the aforesaid equitable adjustment. The Contractor further agrees that such release shall discharge the Government, its officers, agents and employees, from any further claims, including but not limited to, further claims arising out of delays or disruptions or both caused by the aforesaid change.

1.14 As-Built Records: After completion of actual construction work at work site, the Contractor shall submit As-Built Records to confirm the completion of the Contractor's actual construction work. As-built Records shall be As-Built Drawings and As-Built Documents for Work Completion, as required below. Submission and Government's acceptance of As-Built Records shall be completed within contract period, because they are the condition for final payment. Also, reference shall be made to 50T_Trolley_Replacement_Spec_OH-9-1_Sasebo.doc.

1.14.1 As-Built Drawings: Prepare and submit As-Built Drawings in accordance with Contract Clause entitled "RECORD DRAWINGS (ALTERNATE II)".

1.14.2 As-Built Documents for Work Completion: Unless otherwise specified, five sets of the documents required below subparagraphs and two set of electronic files of these documents on CD or DVD shall be furnished and submitted by the Contractor as a part of as-built records. Also, one set of electronic files of these documents on CD or DVD shall be additionally submitted for Government's contract administrative records.

1.14.2.1 Record of Materials: Furnish the record of materials used in the format indicated below. Where several manufacturer's brands, types, or classes of the item listed have been used, designate the specific areas where each item was used. Key designations to the areas and spaces depicted on the contract drawings.

<u>MATERIALS</u>	<u>SPECIFICATION DESIGNATION</u>	<u>MANUFACTURER</u>	<u>MATERIALS USED (MANUFACTURER'S DESIGNATION)</u>	<u>WHERE USED</u>
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1.14.2.2 Record Documents for Work Completion: Furnish the documents listed below for the Government to keep the records which are shown all status performed by the Contractor under this contract. All documents shall be indicated and modified to actual status which have been furnished, if such documents are prepared prior to installation/furnishing, such as documents prepared as submittals.

(1) All submittals other than Samples, such as Shop Drawings, Product Data, Design Data, Certificates, Manufacturer's Instructions, manufacturer's Field Reports, Operation and Maintenance Data, required in all Technical Sections of Divisions 02 thru 49

- (2) Field test results
- (3) Operation manuals for all equipment, prepared by the each manufacturer
- (4) Warranty cards for all equipment (notwithstanding above requirement, submit one set only)
- (5) Manifests for disposed industrial sold wastes

1.15 PROPOSED MATERIAL SUBMITTALS, CATALOG DATA, AND SAMPLES:

a. Allow sufficient time for processing, reviews, approval, and procurement before the Contractor is ready to use the material. No material shall be used prior to written approval. Prepare and assemble submittals as follows:

(1) Submit one copy of each submittal by electric files (Adobe Acrobat Format), unless otherwise specified.

(2) Present submittals for each specification section as a complete bound volume, titled with the project title and contract number.

(3) Provide an index of included items with each volume. Title the index with the applicable specification section name and number.

(4) Clearly mark each item in the volume with the specification paragraph number to which it pertains.

(5) Assemble each volume in the same numerical sequence as specifications section paragraphs.

(6) See individual technical sections for additional information.

(7) Hatch-out information/data in catalog cuts, manufacturers' brochures, reports and certificates that do not pertain to this project.

(8) Submittals shall be in English (Catalog Cuts/Manufacturer's Data may be submitted in Japanese with translation in English.)

In the event of any variance, the Contractor shall state specifically which portions vary and request approval of a substitute. Incomplete submittals and submittals with inadequate data will be rejected.

b. When required, catalog data shall be on printed pages on permanent copies of the manufacturer's catalogs.

c. Ship prepaid samples in the number specified and as directed. Mark samples with the name of the material, the name of the supplier, the contract number, the segment of work where the material represented by the sample is to be used, and the name of the Contractor submitting the sample.

1.16 QUANTITY SURVEYS:

a. The Government will make original and final surveys and compute the quantities of work performed or finally in place.

b. Furnish surveys and computations to determine the quantities of work performed or placed during each period for which a progress payment is requested. Furnish original field notes, computations, and other records for the purpose of layout and progress surveys to the Contracting Officer which will be used by the Contracting Officer to determine the proper amount of progress payments due. Unless directed otherwise, make each quantity survey under the direction of the Contracting Officer.

1.17 CONTRACTOR'S DAILY REPORT: Complete, sign and submit daily the "Daily Report to the Inspector" form to the Contracting Officer by 10:00 AM on the working day following the day the work was performed. Data to be reported include data on workers by classification, problems encountered, work performed, the move-on and move-off of construction equipment furnished by the Contractor and subcontractors or furnished by the Government, and material and equipment delivered to the site. Also, report for last working day of each month shall include data on the number of man hours expended each month under this contract. Required "Daily Report to Inspector" has to be prepared on formal forms which will be furnished by the Government without cost to the Contractor.

PART 2 - EXECUTION

2.1 ACTIVITY REGULATIONS: Ensure that Contractor personnel employed on the Activity become familiar with and obey Activity regulations including safety, fire, traffic, energy conservation, and security regulations. Keep within the limits of the work and avenues of ingress and egress. To minimize traffic congestion, delivery of materials shall be outside of peak traffic hours (06:30 to 08:00 a.m. and 03:30 to 05:00 p.m.) unless otherwise approved by the Contracting Officer. Wear hard hats, with the Contractor's name prominently displayed in English, in designated hard hat areas. Do not enter any restricted areas unless required to do so and until cleared for such entry. The Contractor's equipment shall be conspicuously marked for identification.

2.1.1 Working Hours: Regular working hours in the Government controlled area shall consist of an 8 3/4-hour period (from 08:00 a.m. to 04:45 p.m.), Monday through Friday, excluding Government holidays.

The following days are defined as U.S. Government holidays:

1 January	New Year's Day
3rd Monday of January	Martin Luther King, Jr.'s Birthday
3rd Monday of February	Washington's Birthday
Last Monday of May	Memorial Day
4 July	Independence Day
1st Monday of September	Labor Day
2nd Monday of October	Columbus Day
11 November	Veterans' Day
4th Thursday of November	Thanksgiving Day
25 December	Christmas Day

2.1.1.1 Work Outside Regular Hours: The Contracting Officer, at his discretion, may approve work outside regular hours. If the Contractor desires to carry on work outside regular hours for the Contractor's convenience, submit a written justification giving the specific dates, hours, location, type of work to be performed, contract number and project title for approval. During periods of darkness, light the different parts of the work in an approved manner.

2.2 ORDER OF WORK: Schedule work so as to cause the least amount of interference with activity operations. Work schedules are subject to the approval of the Contracting Officer. Request in writing a minimum of 14 working days prior to the desired date to interrupt any activity roads, or utility service.

2.3 DESCRIPTION OF WORK PERFORMED BY THE CONTRACTOR: In addition to the requirements of the Contract Clause entitled "PERFORMANCE OF WORK BY THE CONTRACTOR" and prior to the commencement of work at the site, furnish to the Contracting Officer a description of the work to be performed with the Contractor's own organization and the percentage of the total amount of work to be performed under the contract which this represents. Consider the value of materials as part of the work performed by the Contractor only if the materials are to be installed on the site by the Contractor's own organization.

2.4 EXISTING WORK:

a. Remove or alter existing work in such a manner as to prevent injury or damage to any portions of the existing work which remain.

b. Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as approved by the Contracting Officer. At the completion of operations, existing work shall be in a condition equal to or better than that which existed before new work started.

2.5 SANITATION: Provision of any sanitary conveniences is not approved. Consequently, the Contractor may use common sanitary conveniences provided in Bldg. 480 upon the approval by the Contracting Officer.

2.6 SPECIFICATIONS AND STANDARDS: The specifications and standards referenced in this project specification, including addenda, amendments, and errata listed, will govern in all cases where references thereto are made. In case of differences between these specifications or standards and this project specification or its accompanying drawings, this project specification and its accompanying drawings will govern to the extent of such differences. Otherwise, the referenced specifications and standards will apply. The requirement for packaging, packing, marking, and preparation for shipment or delivery included in the referenced specifications will apply only to materials and equipment that are furnished directly to the Government and not to materials and equipment that are to be furnished and installed by the Contractor.

2.7 OPTIONAL REQUIREMENTS: Where a choice of materials or methods, or both, is permitted in this contract, the Contractor will be given the right to exercise the option unless otherwise required by the specification.

2.8 GENERAL PROVISIONS: Any reference within this project specification to a General Provision shall be understood to be a reference to the Contract Clause(s) or the General Paragraph(s) addressing the subject matter of the particular reference.

--END OF SECTION--

SECTION 01 11 10

ADDITIONAL GENERAL PARAGRAPHS

PART 1 - GENERAL

1.1 REFERENCES: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.1.1 National Fire Protection Association (NFPA) Publication:

NFPA 241 (2004) Construction, Alteration, and Demolition Operations

1.1.2 U.S. Army Corps of Engineers (USACE) Manual:

EM 385-1-1 Safety and Health Requirements Manual
(15 Sep. 2008)

1.1.3 Code for Regulation:

29 CFR 1926 Safety and Health Regulations for Construction

1.2 PROJECT INFORMATION:

1.2.1 Government Concept Documents: The documents listed below have been prepared by Crane Design Division, Navy Crane Center (NCC), for this project, and these documents are attached by electronic files to show Government concept of the work under this contract, i.e. detailed general requirements including work scopes, design requirements, requirements for test, inspection and acceptance, requirements for technical documentation, and administrative requirements.

DESCRIPTION (ELECTRONIC FILE NAME)

DESIGN AND INSTALLATION OF OVERHEAD BRIDGE CRANE HOIST/TROLLEY ASSEMBLIES
SASEBO NAVAL SHIP REPAIR FACILITY (NSRF) YOKOSUKA, JAPAN - TECHNICAL
SPECIFICATION (50T_Trolley_Replacement_Spec_OH-9-1_Sasebo.doc)

Appendix A: CRANE SAFETY ADVISORY (CSA) 121, MICROPROCESSOR FAILURE ON /AVTRON
ADVANTAGE-32 HOIST DRIVES (Appendix_A.doc)

Appendix B: FIELD TEST PROCEDURES (Appendix_B.doc)

1.2.2 Government Reference Drawings: The drawings listed below are attached by electronic file to show reference information related to this project.

DESCRIPTION (ELECTRONIC FILE NAME)

enclosure (1): Hoist Crane #480 (enclosure_1.pdf)

1.2.3 Subsurface Data: All Government-obtained subsurface data are indicated on the drawings, but such data may not be complete information about the subsurface. The Contractor is required to do necessary survey for performance of the contract work.

1.3 INFORMATION REQUIRED OF THE CONTRACTOR:

1.3.1 Subcontractors and Personnel: Submit the names, addresses, and telephone numbers of the key personnel of the Contractor and subcontractors for use in the event of an emergency. As changes occur and additional information becomes available, correct and change the information contained in previous lists. This information shall be provided to the Contract administrator 14 working days after receipt of the Notice of Award.

1.3.2 Schedule and Equipment Delivery Schedule:

1.3.2.1 Construction Schedule: Within 14 working days after the date the Contractor receives the notice to proceed, submit for approval by the Contracting Officer a construction schedule in accordance with the Contract Clause entitled "SCHEDULES FOR CONSTRUCTION CONTRACTS", except as modified in this contract.

1.3.2.2 Equipment Delivery Schedule: Within 28 days after the Notice of Award, submit for approval a schedule showing the procurement plans for materials, plant, and equipment. Submit in the format prescribed by the Contracting Officer, and include at a minimum the following information:

- a. Description
- b. Date of the purchase order
- c. Promised shipping date
- d. Date delivery is expected
- e. Name of the Manufacturer or supplier
- f. Date the materials or equipment is required, according to the current progress schedule or network

Update the construction schedule every two weeks to show actual progress and equipment delivery schedule at monthly intervals or as directed and submit copies of the purchase orders and confirmation of the delivery dates as directed. Reflect any changes that occurred since the last update and provide with each invoice for progress payment in accordance with the Contract Clause entitled "SCHEDULES FOR CONSTRUCTION CONTRACTS".

1.3.3 Information Required by Other Additional General Paragraphs: Furnish information required by the following paragraphs in addition to the information required by the other parts of the contract, sections of the specification, and other subparagraphs of the paragraph "Information Required of the Contractor":

- a. "Performance of Work by the Contractor"
- b. "Interruptions to Utilities Services"
- c. "As-Built Drawing"
- d. "As-Built Record of Material Used in this Contract"
- e. "Quantity Surveys"

1.4 DIVISION OF WORK:

1.4.1 Government-Furnished Material and Equipment: Not applicable.

1.5 INTERPRETER: The Contractor shall furnish the services of an interpreter at the project site. The interpreter shall have adequate knowledge of English and of construction work to avoid confusion in the translation of technical terms. The interpreter's services must be available within one hour after being requested by the Contracting Officer during working hours and must prove satisfactory to the Contracting Officer.

PART 2 - EXECUTION

2.1 FACILITIES AND SERVICES:

2.1.1 Availability of Utilities Services: Pursuant to the Clauses entitled "AVAILABILITY AND USE OF UTILITIES SERVICES" and "AVAILABILITIES OF UTILITIES", reasonable amounts of potable water, the electricity and compressed air will be made available to the Contractor without charge. The point at which the Government will deliver such utilities or services and the quantity available will be designated by the Contracting Officer. The Contractor shall pay costs incurred in connecting, disconnecting, and transferring the utilities to the work. It will not be needed that the Contractor provide and furnish meters including necessary accessories. The Contractor shall make all necessary work required to connections and disconnections, including restoration work.

2.1.2 Contractor's Storage Area: The Contract Clause entitled "OPERATIONS AND STORAGE AREAS" and the following apply:

2.1.2.1 Storage in Existing Buildings: The Government will provide temporary laydown space in the designated installation vicinity sufficient to accommodate the Contractor's reasonably required material, equipment, and supplies. The Contractor's Technical Proposal shall contain an estimate of the total amount of laydown space which is anticipated to be required.

2.1.2.2 Open Storage Area: Not available.

2.1.3 Temporary Buildings: Not approved.

2.1.4 Parking: The Contractor and its employees shall not park cars in Government controlled areas, except parking areas designated and approved by the Contracting Office for cars used to perform the work under this contract.

2.2 RESTRICTIONS ON EQUIPMENT AND MATERIALS:

2.2.1 Electromagnetic Interference Suppression: Not applicable.

2.2.2 Radio Transmitter Restrictions: Conform to the restrictions and procedures for the use of radio transmitting equipment, as directed. Do not use transmitters without prior approval by the Contracting Officer.

2.3 RESTRICTIONS ON OPERATIONS:

2.3.1 Coordination With Other Work: The Contract Clauses entitled "SCHEDULES FOR CONSTRUCTION CONTRACTS" and "OTHER CONTRACTS" and the paragraph of SECTION 01 11 00 "GENERAL PARAGRAPHS", entitled "Order of Work" shall be applied.

2.3.2 Restrictions Upon Interrupting Activity Operations: Reference is made to the paragraph of Section 01 11 00, "GENERAL PARAGRAPHS," entitled "Order of Work".

2.3.2.1 The Contractor shall be working in existing building that is occupied. The building will remain in operation during the entire construction period. The Contractor shall conduct his operations so as to cause the least possible interference with normal operations of the activity.

2.3.2.2 Occupied Buildings: Do not enter buildings without prior approval of the Contracting Officer and the building occupants.

2.3.3 Restrictions Upon Interrupting Utility Services: The Contract Clause entitled "SCHEDULES FOR CONSTRUCTION CONTRACTS"; the paragraph of SECTION 01 11 00 "GENERAL PARAGRAPHS", entitled "Order of Work"; and the following shall be applied.

2.3.3.1 Interruption to Utilities Service: If the Contractor requires interruption to utilities service, the Contractor shall submit his interruption plan to the Contracting Officer for approval, at least 14 working days prior to actual interruption work, unless otherwise specified.

2.4 SECURITY REQUIREMENTS: Failure to obtain entry approval will not affect the contract price or time of completion.

2.4.1 Personnel: The Contractor shall comply with all activity security requirements. No employee or representative of the Contractor will be admitted to the site of the work in U.S. Fleet Activities, Sasebo, Japan unless he or she has been properly screened for work on the station and can qualify for a gate pass. Issuance of permanent passes will take approximately 10 working days after formal acceptance of pass applications and personal history statements by Pass Office of Security Department, U.S. Fleet Activities, Sasebo. Said pass applications and personal history statements have to be prepared on formal application forms to be furnished by Pass Office of Security Department, U.S. Fleet Activities, Sasebo. Pass Office of Security Department, U.S. Fleet Activities, Sasebo will reject formal acceptance of defective applications forms, which contain improper entry, requesting rectification on them.

2.4.2 Vehicle: No vehicle of the Contractor will be admitted to the site of the work in U.S. Fleet Activities, Sasebo, Japan unless vehicle has been properly approved for such entry. Vehicle pass application shall be submitted to Pass Office of Security Department, U.S. Fleet Activities, Sasebo, Japan as applicable, after acceptance of permanent passes for drivers, required under paragraph 2.4.1.

2.4.3 Control: Maintain strict accountability over identification badges and passes. Report immediately to the source of issue, any badge and pass missing or lost and the circumstances. Return badges immediately to the source of issue upon termination, expiration, completion of contract, or when no longer required. If the Contractor has another active contract or one commencing immediately, employees' names may be transferred from one contract to the other. Final payment will not be effected until employees are transferred to another contract or the records are cleared. Furnish a copy of "Pass Check List" which verifies that passes have been turned in to the Pass Office.

2.5 AIRFIELD REQUIREMENTS: Not applicable.

2.6 SAFETY REQUIREMENTS: The Contractor and his employees shall be subject to all orders and regulations promulgated by the Commanding Officer of the activity concerned, for purpose of insuring base security, cleanliness, and protection from fire hazards. Unless the use of other sanitary facilities is authorized, the Contractor shall provide such conveniences. The Contractor shall take every reasonable and practical precaution as concerns the prevention of fire at work sites. Temporary wiring shall be held to a minimum, and shall be properly insulated and supervised by a competent electrician. The use of unattached salamanders or other heating devices is prohibited. Proper precautionary measures shall be taken in the use of tar kettle, welding and cutting equipment, flammable liquids, and gasoline powered equipment. Gasoline engines shall be shut off during refueling operations. The maintenance of good order and cleanliness is stressed; the removal of combustible formwork, scaffolding, material storage, and temporary building; when no longer needed, is mandatory. A daily cleanup of scrap, lumber, paper, cement sacks and other building debris shall be accomplished. For open fires of any type, a proper permit from the Base Fire Department must be obtained by application to the Contracting Officer. Special care must be exercised when working around electric power lines which are installed on the buildings.

a. Contractor Participation in Safety Program: Prior to commencement of work at the site(s), the Contractor or his appointed representative(s), who will be responsible for the work at the site(s), will be required to attend a pre-construction conference. The pre-construction conference will be convened at a time and place mutually agreeable to the Contractor and the Contracting Officer. Safety and other requirements of the work at the site(s) will be discussed during the pre-construction conference. If the Contractor contemplates that a part of the work at the site(s) will be accomplished by a subcontractor(s), the subcontractor(s) shall be represented at the pre-construction conference by his (their) supervisors.

(1) At the pre-construction conference, the Contractor and his subcontractor will be required to submit for review and discussion a written safety plan which references applicable portions of a safety code(s); for example, Safety and Sanitation Section of the Japan Labor Standard Law.

(2) On the Job Safety Meetings: All Contractor and subcontractor personnel working under this contract at the site(s) shall attend a weekly safety meeting of at least 5 minutes duration. No change in contract price shall be entertained because of these meetings. A representative of the Contracting Officer may attend these meetings. It behooves the Contractor to incite active participation in these meetings to promote the highest possible degree of safety at the work site(s).

(3) Accident Reports: The Contractor shall report all lost time injuries on NAVFAC Form CSIR (Contractor Significant Accident Report) within 24 hours following the lost time injury. Accident reports shall not be held up for return to work of the injured employee. The Navy inspector or the Contractor's job supervisor shall estimate the injury time loss. The Contractor shall report all accident with any of the consequences as listed in Section 01.D or 01.D.02 of EM 385-1 to the designated authority. NAVFAC Form CSIR is available at the FEAD Office.

b. Scaffolding: COE EM 358-1-1 shall be applied.

2.7 FIRE PREVENTION REQUIREMENTS:

2.7.1 General: Comply with the latest editions of the COE EM 385-1-1, NFPA 241, and activity fire regulations. Obtain approval from the activity Fire Chief prior to commencement of hot work operations.

2.7.2 Notification of Fire: Post the activity fire poster in conspicuous locations.

2.8 ACTIONS REQUIRED OF THE CONTRACTOR:

2.8.1 Materials and Equipment to be Salvaged: Not Required.

2.8.3 Activity Permits: Obtain these pursuant to the paragraph of Section 01 11 00 "GENERAL PARAGRAPHS", entitled "Activity Regulations". Permits are required for, but are not necessarily limited to, welding, digging, and burning. Allow seven calendar days for processing of the application.

2.8.4 Storm Protection: When warnings of gale force winds (34-49 knots) are issued, take precautions to minimize any danger to persons, and protect the work and any nearby Government property. Precautions shall include, but are not limited to, closing openings; removing loose materials, tools, and equipment from exposed locations; and removing or securing temporary work.

2.8.5 Asbestos Material: Not applicable.

2.8.6 Mercury Material: Not applicable.

2.8.7 Radiation Areas: Not applicable.

2.8.8 Smoking: Smoking other than designated smoking area is strictly prohibited on "SMOKING POLICY FOR DEPARTMENT OF THE NAVY (DON) CONTROLLED SPACE" issued by SECNAV.

2.8.9 Pre-construction Conference: After award of the contract, but prior to commencement of any work at the site, meet with the Contracting Officer to discuss and develop a mutual understanding relative to the administration of the value engineering and safety program, preparation and submission of the schedule of prices, shop drawings and other submittals, scheduling, programming and prosecution of work. Major subcontractors who will be engaged in the work shall also attend.

2.8.10 Identifications:

2.8.10.1 Identification of Contractor Employees: All Contractor/subcontractor employees working under this contract shall be identified by a distinctive name plate, emblem, or patch attached in a prominent place on an outer garment. Employee identification shall not be substituted for station required passes or badges. Employee identification shall be described in English.

2.8.10.2 Identification of Contractor Vehicles: Each Contractor provided vehicle shall show the Contractor's name so that it is clearly visible and shall at all times, display a valid state license plate and safety inspection sticker. Contractor vehicles operated on Government property shall be maintained in good repair. Vehicle identification shall be described in English.

2.9 WARRANTY CARD: The Contractor shall complete a warranty card where directed by the Contracting Officer. It is a matter of course that the warranty card shall not cover the material furnished by the Government, accordingly, the warranty card shall indicate such conditions. The information on the warranty card shall be verified by the Contracting Officer, prior to being posted. A sample warranty card is shown as Attachment No.1 to this Section.

2.10 HAZARDOUS MATERIALS: The Contractor shall provide the Contracting Officer a hazardous material (HM) inventory and material safety data sheet (MSDSs) before such HM comes on to the job site on base. The Contractor shall submit contractor plans for protection of public and Navy personnel, HM disposal, and procedures for HM spill response in conformance with local regulations.

2.11 MATERIAL REQUIREMENTS: All materials shall be new except where indicated as existing or reused. Do not use materials having a lead content over 0.06 percent by weight of nonvolatile content. Also, all materials to be used under this contract shall be Non-asbestos type (Asbestos contained; less than 0.1 percent by weight).

2.11.1 Certificates of Compliance: For each materials furnished, submit a certificate from the manufacturer stating that the product conforms to requirements, i.e. certifications of lead and/or asbestos quantities contained materials;

--END OF SECTION--

WARRANTY CARD

CONTRACT NO. : _____

CONTRACT TITLE : _____

CONTRACT COMPLETION DATE : _____

FEAD ACCEPTANCE DATE : _____

CONTRACTOR'S NAME : _____

CONTRACTOR'S POINT OF CONTACT : _____

CONTRACTOR'S ADDRESS : _____

CONTRACTOR'S PHONE NO. : _____

WARRANTY DURATION : _____

STARTING DATE : _____

ENDING DATE : _____

FACILITY LOCATION : _____

FACILITY NUMBER : _____

WARRANTY CARD COMPLETED BY : _____

DATE : _____

In warranty duration, any defects discovered under this warranty shall be reported directly to the FEAD Office
at DSN 252-3644.

SECTION 01 33 10

SUBMITTAL FOR DESIGN

PART 1 - GENERAL

1.1 SUMMARY:

1.1.1 Section Includes: This section includes requirements for developing and submitting a design including preparation of drawings, and design analyses.

1.1.2 Section Excludes: This section does not include requirements for construction submittals which are specified in Section 01 33 20 "SUBMITTAL PROCEDURES FOR CONSTRUCTION."

1.2 DEFINITIONS:

1.2.1 Design: Documents which include design drawings, and calculations prepared by or under the direct supervision of registered professional architects and engineers and proposed by the Contractor.

1.2.2 Design Drawings: Documentation showing in graphic and quantitative form the extent, design, location, relationships, and dimensions of the construction to be provided by the Contractor. (Note: Shop Drawings, as defined in Section 01 33 20 "SUBMITTAL PROCEDURES FOR CONSTRUCTION" are not to be provided in lieu of design drawings.)

1.2.3 Designer/Design Agent: Architects and Engineers (A/E) associated with the Contractor who are responsible for the design and have the necessary qualifications and experience.

1.3 DESIGN REQUIREMENTS: The Contractor shall;

- a. Prepare design drawings for construction of the facility;
- b. Prepare design analyses supporting the design shown;
- c. Coordinate all elements of the design to ensure there are no conflicts;
- d. Present information 100 percent complete in a single submission and in sufficient detail to permit a complete review by the Government.

1.4 FORMAT OF SUBMITTALS:

1.4.1 Transmittal Form: As specified in Section 01 33 20 "SUBMITTAL PROCEDURES FOR CONSTRUCTION."

1.4.2 Format of Preliminary (60%), Pre-final (100%) and Final Design Drawings: As specified in PART 3 hereinafter.

1.4.3 Format of Others: As specified in Section 01 33 20 "SUBMITTAL PROCEDURES FOR CONSTRUCTION."

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 DRAWINGS: Prepare, organize, and present drawings in the format considered standard industry practice, except as modified herein. Provide drawings complete, accurate and explicit enough to show compliance with "A-E Guide" and to permit construction. Coordinate drawings to ensure there are no conflicts between design disciplines and between drawings and specifications.

3.1.1 Drawings Format: Prepare 21 by 32 inch, "D" size drawings. If the Contractor requires, drawing format will be available by electronic data ("AUTOCAD" data) at Engineering Division, Public Works Department via the Contracting Officer. Except for site plans, minimum drawing scale shall be 1/8 inch per foot. NAVFAC drawing numbers for the design drawings will be assigned by the Government after approval of the design.

3.1.2 Drawings Sequence: Arrange drawings by design discipline and sequentially number drawings within each discipline.

3.1.3 Drawings Required: As a minimum, the Contractor shall prepare and submit the following design drawings;

- a. Title Sheet and Index of Drawings
- b. Civil Drawings

3.2 DESIGN ANALYSES: Prepare design analyses (basis of design and calculations) for each design discipline. Specific requirements relative to the technical content to be provided are specified in Section 01 73 00 "TECHNICAL REQUIREMENTS FOR DESIGN". The design analyses shall include a basis of design and calculations for each discipline. The design analyses shall be a presentation of facts to demonstrate that the concept of the project is fully understood and that the design is based on sound engineering. The design analysis for each discipline shall include;

- a. A basis of design consisting of;
 - (1) An introductory description of the project concept which addresses the salient points of the design;
 - (2) An orderly and comprehensive documentation of criteria, rationale, assumptions and reasoning for system selection.
- b. Calculations to support the design.

3.2.1 Format: The design analyses for each discipline shall include a cover page indicating the project title, location and construction contract number, table of contents and tabbed separations for quick reference. Submit design analyses prepared on 8 1/2 by 11 inch white paper. The design analyses for each discipline shall be bound in separate volumes. Multiple volumes for individual disciplines, appropriately numbered, may be provided when required.

3.2.2 Calculations: Calculations for each design discipline shall include a cover page, a table of contents, a summary of criteria on the first page and the project title, location and construction contract number identified on every page of the calculations. All calculation pages shall be clearly legible and photo-ready. Each page, consecutively numbered, shall identify the total number of pages contained in the calculations (Page _____ of _____), and the date. Cite criteria from which the calculations, rationale, and formulae are extracted by publication number, title, edition and page number. The cover page and each page of calculations shall also include the names of the persons originating and checking the calculations. The person checking the calculations shall be a registered professional engineer other than the originator. In addition, the signature and seal of the appropriate registered professional engineer responsible for the work shall appear on the cover page of the calculations for each discipline. The table of contents shall include title and page number for each topic (Introduction, Design Criteria, Calculations, etc.) addressed in the calculations. Computer printouts shall be identified similar to the calculations and may be referenced as an appendix or attachment to the design analysis. Identify the computer program name, source, and version. All schematic models used for computer input shall be provided.

3.3 DESIGN CERTIFICATION: The Contractor shall provide certification signed by an officer of the Contractor's company attesting that the drawings and design analyses prepared for the construction of the facility meet the requirements of the RFP. The certification shall accompany the submission of the design documents. Prepare the design certification and transmittal letter in the format as directed by the Contracting Officer.

3.4 SUBMISSION REQUIREMENTS:

3.4.1 Distribution of Design Documents for Conformance Review: Provide five copies of the stamped or sealed and signed design drawings, Submittals Register, and design data (calculation data) for review by the Government.

3.4.2 Government Signature Requirements: After the final Government review, submit to the Contracting Officer the complete design, including all changes incorporated in response to the reviewer's comments, in order to obtain the signature of the Government representative. This signature will signify the completeness of the design submittal in regards to meeting the contract requirements, but will not be considered to be an approval of the design itself. Final approval of the entire project will be provided upon the completion of all work.

--END OF SECTION--

SECTION 01 33 20

SUBMITTAL PROCEDURES FOR CONSTRUCTION

PART 1 - GENERAL

1.1 DEFINITIONS:

1.1.1 Submittal Descriptions (SD): Submittals requirements are specified in the technical sections. Submittals are identified by Submittal Description (SD) numbers and titles as follows:

SD-01 Preconstruction Submittals

Submittals which are required prior to a notice to proceed commencing work on site. Submittals required prior to the start of the next major phase of the construction on a multi-phase contract. Schedules or tabular list of data or tabular list including location, features, or other pertinent information regarding products, materials, equipment, or components to be used in the work, submitted prior to contract notice to proceed or next major phase of construction.

- Certificates of insurance
- Surety bonds
- List of proposed subcontractors
- List of proposed products
- Construction Progress Schedule
- Network Analysis Schedule (NAS)
- Submittal register
- Schedule of prices
- Health and safety plan
- Work plan
- Quality control(QC) plan
- Environmental protection plan

SD-02 Shop Drawings

Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.

Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.

Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials, systems or equipment for some portion of the work.

Samples of warranty language when the contract requires extended product warranties.

SD-04 Samples

Fabricated or unfabricated physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged.

Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project.

Field samples and mock-ups constructed on the project site establish standards by which the ensuring work can be judged. Includes assemblies or portions of assemblies which are to be incorporated into the project and those which will be removed at conclusion of the work.

SD-05 Design Data

Design calculations, mix designs, analyses or other data pertaining to a part of work.

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)

Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports.

Daily logs and checklists.

Final acceptance test and operational test procedure.

SD-07 Certificates

Statements printed on the manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.

Document required of Contractor, or of a manufacturer, supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.

Confined space entry permits.

Text of posted operating instructions.

SD-08 Manufacturer's Instructions

Preprinted material describing installation of a product, system or material, including special notices and Material Safety Data sheets concerning impedances, hazards and safety precautions.

SD-09 Manufacturer's Field Reports

Documentation of the testing and verification actions taken by manufacturer's representative at the job site, in the vicinity of the job site, or on a sample taken from the job site, on a portion of the work, during or after installation, to confirm compliance with manufacturer's standards or instructions. The documentation must be signed by an authorized official of a testing laboratory or agency and must state the test results; and indicate whether the material, product, or system has passed or failed the test.

Factory test reports.

SD-10 Operation and Maintenance Data

Data that is furnished by the manufacturer, or the system provider, to the equipment operating and maintenance personnel, including manufacturer's help and product line documentation necessary to maintain and install equipment. This data is needed by operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item.

This data is intended to be incorporated in an operations and maintenance manual or control system.

SD-11 Closeout Submittals

Documentation to record compliance with technical or administrative requirements or to establish an administrative mechanism.

Special requirements necessary to properly close out a construction contract. For example, Record Drawings and as-built drawings. Also, submittal requirements necessary to properly close out a major phase of construction on a multi-phase contract.

1.1.2 Approving Authority: Office or designated person authorized to approve submittal.

1.1.3 Work: As used in this section, on- and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.2 SUBMITTALS: Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor QC approval. Submit the following in accordance with this section.

SD-01 Preconstruction Submittals

Submittal register; G

1.3 SUBMITTAL CLASSIFICATION: Submittals are classified as follows:

1.3.1 Designer of Record Approved: Designer of Record approval is required for extensions of design, critical materials, any deviations from the solicitation, the accepted proposal, or the completed design, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings." Contractor to provide the Government with the number of copies designated hereinafter of all Designer of Record approved submittals. The Government may review any or all Designer of Record approved submittals for conformance to the Solicitation and Accepted Proposal. The Government will review all submittals designated as deviating from the Solicitation or Accepted Proposal, as described below. Generally, design submittals should be identified as SD-05 Design Data submittals.

1.3.2 Government Approved: Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Government approval is required for any deviations from the Solicitation or Accepted Proposal and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.3.3 Information Only: Submittals not requiring Government approval will be for information only. For Design-build construction all submittals not requiring Designer of Record or Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.4 PREPARATION:

1.4.1 Transmittal Form: Transmit each submittal by electronic files such as pdf format, except sample installations and sample panels, to office of approving authority. Transmit submittals with transmittal form prescribed by Contracting Officer and standard for project. On the transmittal form identify Contractor, indicate date of submittal, and include information prescribed by transmittal form and required in paragraph entitled "Identifying Submittals." Process transmittal forms to record actions regarding samples.

1.4.2 Identifying Submittals: When submittals are provided by a lower tier contractor the Prime Contractor is to prepare, review and stamp with Contractor's approval all specified submittals prior to submitting for Government approval.

Identify submittals, except sample installations and sample panels, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:

- a. Project title and location.
- b. Construction contract number.
- c. Date of the drawings and revisions.
- d. Name, address, and telephone number of subcontractor, supplier, manufacturer and any other second tier Contractor associated with submittal.
- e. Section number of the specification section by which submittal is required.
- f. Submittal description (SD) number of each component of submittal.
- g. When a resubmission, add alphabetic suffix on submittal description, for example, submittal 18 would become 18A, to indicate resubmission.
- h. Product identification and location in project.

1.4.3 Format for SD-02 Shop Drawings:

- a. Shop drawings are not to be less than 210 by 297 mm (8 1/2 by 11 inches) nor more than 1189 by 841 mm (30 by 42 inches), except for full size patterns or templates. Prepare drawings to accurate size, with scale indicated, unless other form is required. Drawings are to be suitable for reproduction and be of a quality to produce clear, distinct lines and letters with dark lines on a white background.
- b. Present A4 297 by 210 mm (8 1/2 by 11 inches) sized shop drawings as part of the bound volume for submittals required by section. Present larger drawings in sets.
- c. Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph entitled "Identifying Submittals."
- d. Number drawings in a logical sequence. Contractors may use their own number system. Each drawing is to bear the number of the submittal in a uniform location adjacent to the title block. Place the Government contract number in the margin, immediately below the title block, for each drawing.
- e. Reserve a blank space, no smaller than 25.4 millimeter (one inch) on the right hand side of each sheet for the Government disposition stamp.

f. Dimension drawings, except diagrams and schematic drawings; prepare drawings demonstrating interface with other trades to scale. Use the same unit of measure for shop drawings as indicated on the contract drawings. Identify materials and products for work shown.

g. Include the nameplate data, size and capacity on drawings. Also include applicable federal, military, industry and technical society publication references.

1.4.4 Format of SD-03 Product Data and SD-08 Manufacturer's Instructions:

a. Present product data submittals for each section as a complete, bound volume. Include table of contents, listing page and catalog item numbers for product data.

b. Indicate, by prominent notation, each product which is being submitted; indicate specification section number and paragraph number to which it pertains.

c. Supplement product data with material prepared for project to satisfy submittal requirements for which product data does not exist. Identify this material as developed specifically for project, with information and format as required for submission of SD-07 Certificates.

d. Provide product data in metric dimensions. Where product data are included in preprinted catalogs with English units only, submit metric dimensions on separate sheet.

e. Include the manufacturer's name, trade name, place of manufacture, and catalog model or number on product data. Also include applicable federal, military, industry and technical society publication references. Should manufacturer's data require supplemental information for clarification, submit as specified for SD-07 Certificates.

f. Where equipment or materials are specified to conform to industry and technical society reference standards of the organizations such as American National Standards Institute (ANSI), ASTM International (ASTM), National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL), and Association of Edison Illuminating Companies (AEIC), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Contracting Officer. State on the certificate that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.

g. Collect required data submittals for each specific material, product, unit of work, or system into a single submittal and marked for choices, options, and portions applicable to the submittal. Mark each copy of the product data identically. Partial submittals will not be accepted for expedition of construction effort.

h. Submit manufacturer's instructions prior to installation.

1.4.5 Format of SD-04 Samples:

a. Furnish samples in sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately same size as specified:

(1) Sample of Equipment or Device: Full size.

(2) Sample of Materials Less Than 50 by 75 mm (2 by 3 inches): Built up to A4 297 by 210 mm (8 1/2 by 11 inches.)

(3) Sample of Materials Exceeding A4 297 by 210 mm (8 1/2 by 11 inches): Cut down to A4 297 by 210 mm (8 1/2 by 11 inches) and adequate to indicate color, texture, and material variations.

(4) Sample of Linear Devices or Materials: 250 mm (10 inch) length or length to be supplied, if less than 250 mm (10 inches). Examples of linear devices or materials are conduit and handrails.

(5) Sample of Non-Solid Materials: 750 ml Pint. Examples of non-solid materials are sand and paint.

(6) Color Selection Samples: 50 by 100 mm (2 by 4 inches). Where samples are specified for selection of color, finish, pattern, or texture, submit the full set of available choices for the material or product specified. Sizes and quantities of samples are to represent their respective standard unit.

(7) Sample Panel: 1200 by 1200 mm (4 by 4 feet).

(8) Sample Installation: 10 square meters (100 square feet).

b. Samples Showing Range of Variation: Where variations in color, finish, pattern, or texture are unavoidable due to nature of the materials, submit sets of samples of not less than three units showing extremes and middle of range. Mark each unit to describe its relation to the range of the variation.

c. Reusable Samples: Incorporate returned samples into work only if so specified or indicated. Incorporated samples are to be in undamaged condition at time of use.

d. Recording of Sample Installation: Note and preserve the notation of area constituting sample installation but remove notation at final clean up of project.

e. When color, texture or pattern is specified by naming a particular manufacturer and style, include one sample of that manufacturer and style, for comparison.

1.4.6 Format of SD-05 Design Data and SD-07 Certificates: Provide design data and certificates on 297 by 210 mm 8 1/2 by 11 inches paper. Provide a bound volume for submittals containing numerous pages.

1.4.7 Format of SD-06 Test Reports and SD-09 Manufacturer's Field Reports:

a. Provide reports on 297 by 210 mm (8 1/2 by 11 inches) paper in a complete bound volume.

b. Indicate by prominent notation, each report in the submittal. Indicate specification number and paragraph number to which it pertains.

1.4.8 Format of SD-10 Operation and Maintenance Data (O&M): Comply with the requirements specified in Section 01 78 23 OPERATION AND MAINTENANCE DATA for O&M Data format.

1.4.9 Format of SD-01 Preconstruction Submittals and SD-11 Closeout Submittals:

a. When submittal includes a document which is to be used in project or become part of project record, other than as a submittal, do not apply Contractor's approval stamp to document, but to a separate sheet accompanying document.

b. Provide all dimensions in administrative submittals in metric. Where data are included in preprinted material with English units only, submit metric dimensions on separate sheet.

1.5 QUANTITY OF SUBMITTALS:

1.5.1 Number of Copies of SD-02 Shop Drawings: Submit one copy of submittals of shop drawings requiring review and approval only by QC organization and one copy of shop drawings requiring review and approval by Contracting Officer.

1.5.2 Number of Copies of SD-03 Product Data and SD-08 Manufacturer's Instructions: Submit in compliance with quantity requirements specified for shop drawings.

1.5.3 Number of Samples SD-04 Samples:

- a. Submit one sample, or one set of samples showing range of variation, of each required item.
- b. Submit one sample panel or provide one sample installation where directed. Include components listed in technical section or as directed.
- c. Submit one sample installation, where directed.
- d. Submit one sample of non-solid materials.

1.5.4 Number of Copies SD-05 Design Data and SD-07 Certificates: Submit in compliance with quantity requirements specified for shop drawings.

1.5.5 Number of Copies SD-06 Test Reports and SD-09 Manufacturer's Field Reports: Submit in compliance with quantity and quality requirements specified for shop drawings other than field test results that will be submitted with QC reports.

1.5.6 Number of Copies of SD-10 Operation and Maintenance Data: Submit three copies of O&M Data to the Contracting Officer for review and approval.

1.5.7 Number of Copies of SD-01 Preconstruction Submittals and SD-11 Closeout Submittals: Unless otherwise specified, submit one set of administrative submittals.

1.6 VARIATIONS/SUBSTITUTION REQUESTS: Variations from contract requirements require Government approval pursuant to Contract Clause entitled "Specifications and Drawings for Construction" and will be considered where advantageous to Government.

1.6.1 Considering Variations: Discussion with Contracting Officer prior to submission, will help ensure functional and quality requirements are met and minimize rejections and re-submittals. When contemplating a variation which results in lower cost, consider submission of the variation as a Value Engineering Change Proposal (VECP).

Specifically point out variations from contract requirements in transmittal letters. Failure to point out deviations may result in the Government requiring rejection and removal of such work at no additional cost to the Government.

1.6.2 Proposing Variations: When proposing variation, deliver written request to the Contracting Officer, with documentation of the nature and features of the variation and why the variation is desirable and beneficial to Government. If lower cost is a benefit, also include an estimate of the cost savings. In addition to documentation required for variation, include the submittals required for the item. Clearly mark the proposed variation in all documentation.

1.6.3 Warranting That Variations Are Compatible: When delivering a variation for approval, Contractor warrants that this contract has been reviewed to establish that the variation, if incorporated, will be compatible with other elements of work.

1.6.4 Review Schedule Is Modified: In addition to normal submittal review period, a period of 10 working days will be allowed for consideration by the Government of submittals with variations.

1.7 SUBMITTAL REGISTER: Prepare and maintain submittal register, as the work progresses. Retain data which is output in columns (a), (g), (h), and (i) as approved. A submittal register showing items of equipment and materials for which submittals are required by the specifications is provided as an attachment. This list may not be all inclusive and additional submittals may be required. The Contractor shall complete following fields in blank submittal register prepared by the Government, to the extent that will be required by the Government during subsequent usage.

Column (c): Lists specification section in which submittal is required.

Column (d): Lists each submittal description (SD No. and type, e.g. SD-02 Shop Drawings) required in each specification section.

Column (e): Lists one principal paragraph in specification section where a material or product is specified. This listing is only to facilitate locating submitted requirements. Do not consider entries in column (e) as limiting project requirements.

Column (f): Indicate approving authority for each submittal.

1.7.1 Use of Submittal Register: Submit submittal register. Submit with QC plan and project schedule. Verify that all submittals required for project are listed and add missing submittals. Coordinate and complete the following fields on the register submitted with the QC plan and the project schedule:

Column (a) Activity Number: Activity number from the project schedule.

Column (g) Contractor Submit Date: Scheduled date for approving authority to receive submittals.

Column (h) Contractor Approval Date: Date Contractor needs approval of submittal.

Column (i) Contractor Material: Date that Contractor needs material delivered to Contractor control.

1.7.2 Contractor Use of Submittal Register: Update the following fields with each submittal throughout contract.

Column (b) Transmittal Number: Contractor assigned list of consecutive numbers.

Column (j) Action Code (k): Date of action used to record Contractor's review when forwarding submittals to QC.

Column (l): List date of submittal transmission.

Column (q): List date approval received.

1.7.3 Approving Authority Use of Submittal Register: Update the following fields.

Column (b): Transmittal Number: Contractor assigned list of consecutive numbers.

Column (l): List date of submittal receipt.

Column (m): through (p) List Date related to review actions.

Column (q): List date returned to Contractor.

1.7.4 Contractor Action Code and Action Code: Entries for columns (j) and (o), are to be used as follows (others may be prescribed by Transmittal Form):

NR - Not Received

AN - Approved as noted

A - Approved

RR - Disapproved, Revise, and Resubmit

1.8 SCHEDULING: Schedule and submit concurrently submittals covering component items forming a system or items that are interrelated. Include certifications to be submitted with the pertinent drawings at the same time. No delay damages or time extensions will be allowed for time lost in late submittals.

a. Coordinate scheduling, sequencing, preparing and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow for potential resubmittal of requirements.

b. Submittals called for by the contract documents will be listed on the register. If a submittal is called for but does not pertain to the contract work, the Contractor is to include the submittal in the register and annotate it "N/A" with a brief explanation. Approval by the Contracting Officer does not relieve the Contractor of supplying submittals required by the contract documents but which have been omitted from the register or marked "N/A".

c. Re-submit register and annotate monthly by the Contractor with actual submission and approval dates. When all items on the register have been fully approved, no further re-submittal is required.

d. Carefully control procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

e. Except as specified otherwise, allow review period, beginning with receipt by approving authority, that includes at least 15 working days for submittals for QC Manager approval and 15 working days for submittals for Contracting Officer approval. Period of review for submittals with Contracting Officer approval begins when Government receives submittal from QC organization.

f. For submittals requiring review by fire protection engineer, allow review period, beginning when Government receives submittal from QC organization, of 30 working days for return of submittal to the Contractor.

g. Period of review for each resubmittal is the same as for initial submittal.

1.8.1 Reviewing, Certifying, Approving Authority: The QC organization is responsible for reviewing and certifying that submittals are in compliance with contract requirements. Approving authority on submittals is QC Manager unless otherwise specified for specific submittal. At each "Submittal" paragraph in individual specification sections, a notation "G," following a submittal item, indicates Contracting Officer is approving authority for that submittal item.

1.8.2 Constraints:

a. Conform to provisions of this section, unless explicitly stated otherwise for submittals listed or specified in this contract.

b. Submit complete submittals for each definable feature of work. Submit at the same time components of definable feature interrelated as a system.

c. When acceptability of a submittal is dependent on conditions, items, or materials included in separate subsequent submittals, submittal will be returned without review.

d. Approval of a separate material, product, or component does not imply approval of assembly in which item functions.

1.8.3 QC Organization Responsibilities:

- a. Note date on which submittal was received from Contractor on each submittal.
- b. Review each submittal; and check and coordinate each submittal with requirements of work and contract documents.
- c. Review submittals for conformance with project design concepts and compliance with contract documents.
- d. Act on submittals, determining appropriate action based on QC organization's review of submittal.

(1) When QC Manager is approving authority, take appropriate action on submittal from the possible actions defined in paragraph entitled, "Actions Possible."

(2) When Contracting Officer is approving authority or when variation has been proposed, forward submittal to Government with certifying statement or return submittal marked "not reviewed" or "revise and resubmit" as appropriate. The QC organization's review of submittal determines appropriate action.

- e. Ensure that material is clearly legible.
- f. Stamp each sheet of each submittal with QC certifying statement or approving statement, except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only.

(1) When approving authority is Contracting Officer, QC organization will certify submittals forwarded to Contracting Officer with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with contract Number [____], is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is submitted for Government approval.

Certified by Submittal Reviewer _____, Date _____
(Signature when applicable)

Certified by QC Manager _____, Date _____"
(Signature)

(2) When approving authority is QC Manager, QC Manager will use the following approval statement when returning submittals to Contractor as "Approved" or "Approved as Noted."

"I hereby certify that the (material) (equipment) (article) shown and marked in this submittal and proposed to be incorporated with contract Number [____], is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is approved for use.

Certified by Submittal Reviewer _____, Date _____
(Signature when applicable)

Approved by QC Manager _____, Date _____"
(Signature)

- g. Sign certifying statement or approval statement. The QC organization member designated in the approved QC plan is the person signing certifying statements. The use of original ink for signatures is required. Stamped signatures are not acceptable.

h. Update submittal register as submittal actions occur and maintain the submittal register at project site until final acceptance of all work by Contracting Officer.

i. Retain a copy of approved submittals at project site, including Contractor's copy of approved samples.

1.9 GOVERNMENT APPROVING AUTHORITY: When approving authority is Contracting Officer, the Government will:

a. Note date on which submittal was received from QC Manager.

b. Review submittals for approval within scheduling period specified and only for conformance with project design concepts and compliance with contract documents.

c. Identify returned submittals with one of the actions defined in paragraph entitled "Review Notations" and with markings appropriate for action indicated.

Upon completion of review of submittals requiring Government approval, stamp and date approved submittals. If the Government performs a conformance review of other Designer of Record approved submittals, the submittals will be so identified and returned, as described above.

1.9.1 Review Notations: Contracting Officer review will be completed within 14 working days after date of submission. Submittals will be returned to the Contractor with the following notations:

a. Submittals marked "approved" or "accepted" authorize the Contractor to proceed with the work covered.

b. Submittals marked "approved as noted" "or approved except as noted, resubmittal not required," authorize the Contractor to proceed with the work covered provided he takes no exception to the corrections.

c. Submittals marked "not approved" or "disapproved," or "revise and resubmit," indicate noncompliance with the contract requirements or design concept, or that submittal is incomplete. Resubmit with appropriate changes. No work shall proceed for this item until resubmittal is approved.

d. Submittals marked "not reviewed" will indicate submittal has been previously reviewed and approved, is not required, does not have evidence of being reviewed and approved by Contractor, or is not complete. A submittal marked "not reviewed" will be returned with an explanation of the reason it is not reviewed. Resubmit submittals returned for lack of review by Contractor or for being incomplete, with appropriate action, coordination, or change.

1.10 DISAPPROVED SUBMITTALS: Contractor shall make corrections required by the Contracting Officer. If the Contractor considers any correction or notation on the returned submittals to constitute a change to the contract drawings or specifications; notice as required under the clause entitled, "Changes" is to be given to the Contracting Officer. Contractor is responsible for the dimensions and design of connection details and construction of work. Failure to point out deviations may result in the Government requiring rejection and removal of such work at the Contractor's expense.

If changes are necessary to submittals, the Contractor shall make such revisions and submission of the submittals in accordance with the procedures above. No item of work requiring a submittal change is to be accomplished until the changed submittals are approved.

1.11 APPROVED SUBMITTALS" The Contracting Officer's approval or acceptance of submittals is not be construed as a complete check, and indicates only that the general method of construction, materials, detailing and other information are satisfactory design, general method of construction, materials, detailing and other information appear to meet the Solicitation and Accepted Proposal. Approval or acceptance will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved or accepted by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.12 APPROVED SAMPLES: Approval of a sample is only for the characteristics or use named in such approval and is not be construed to change or modify any contract requirements. Before submitting samples, the Contractor to assure that the materials or equipment will be available in quantities required in the project. No change or substitution will be permitted after a sample has been approved.

Match the approved samples for Materials and equipment incorporated in the work. If requested, approved samples, including those which may be damaged in testing, will be returned to the Contractor, at his expense, upon completion of the contract. Samples not approved will also be returned to the Contractor at its expense, if so requested.

Failure of any materials to pass the specified tests will be sufficient cause for refusal to consider, under this contract, any further samples of the same brand or make of that material. Government reserves the right to disapproved any material or equipment which previously has proved unsatisfactory in service.

Samples of various materials or equipment delivered on the site or in place may be taken by the Contracting Officer for testing. Samples failing to meet contract requirements will automatically void previous approvals. Contractor to replace such materials or equipment to meet contract requirements.

Approval of the Contractor's samples by the Contracting Officer does not relieve the Contractor of his responsibilities under the contract.

1.13 WITHHOLDING OF PAYMENT: Payment for materials incorporated in the work will not be made if required approvals have not been obtained. No payment for materials incorporated in the work will be made if all required Designer of Record or required Government approvals have not been obtained. No payment will be made for any materials incorporated into the work for any conformance review submittals or information only submittals found to contain errors or deviations from the Solicitation or Accepted Proposal.

1.14 STATUS REPORT ON MATERIALS ORDERS: Within 14 working days after notice of award, submit, for approval by the Contracting Officer, an initial material status report on all materials orders. This report will be updated and re-submitted every 30 calendar days as the status on material orders changes.

Report to include list, in chronological order by need date, materials orders necessary for completion of the contract. The following information will be required for each material order listed:

- a. Material name, supplier, and invoice number.
- b. Bar chart line item or CPM activity number affected by the order.
- c. Delivery date needed to allow directly and indirectly related work to be completed within the contract performance period.
- d. Current delivery date agreed on by supplier.
- e. When item d exceeds item c, the effect that delayed delivery date will have on contract completion date.

f. When item d exceeds item c, a summary of efforts made by the Contractor to expedite the delayed delivery date to bring it in line with the needed delivery date, including efforts made to place the order (or subcontract) with other suppliers.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not Used

SECTION 01 35 29

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

PART 1 - GENERAL

1.1 REFERENCES: The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

1.1.1 American National Standards Institute (ANSI):

ANSI A10.32	Personal Fall Protection - Safety Requirements for Construction and Demolition Operations
ANSI Z359.1	(1992; R 1999) Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
ANSI/ASSE A10.34	(2001) Protection of the Public on or Adjacent to Construction Sites
ASME B30.3	(1996) Construction Tower Cranes

1.1.2 ASME International (ASME):

ASME B30.22	(2000) Articulating Boom Cranes
ASME B30.5	(2004) Mobile and Locomotive Cranes
ASME B30.8	(2004) Floating Cranes and Floating Derricks

1.1.3 National Fire Protection Association (NFPA):

NFPA 10	(2007) Portable Fire Extinguishers
NFPA 241	(2004) Construction, Alteration, and Demolition Operations
NFPA 51B	(2009) Welding, Cutting, Other Hot Work
NFPA 70	(2008) National Electrical Code
NFPA 70E	(2009) Electrical Safety in the Workplace

1.1.4 U.S. Army Corps of Engineers (USACE) Manual:

EM 385-1-1 (15 Sep. 2008)	Safety and Health Requirements Manual
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1.1.5 U.S. National Archives And Records Administration (NARA):

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1915	Confined and Enclosed Spaces and Other Dangerous Atmospheres in Shipyard Employment
29 CFR 1919	Gear Certification
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.500	Fall Protection

1.1.6 Industrial Safety and Health Department, Ministry of Labor, Government of Japan:

The Law and Regulation of Industrial Safety and Health for Labors
(Rodo Anzen-Eisei Ho, Rodo Anzen-Eisei Kisoku)

1.2 SUBMITTALS: Government approval is required for submittals with a "G" designation. Submittals not having a "G" designation are for Contractor SSHO approval and are provided to the Government as "information only" submittals.

1.2.1 SD-01 Preconstruction Submittals:

- a. Accident Prevention Plan (APP); G
- b. Activity Hazard Analysis (AHA); G
- c. Crane Critical Lift Plan; G
- d. Proof of qualification for Crane Operators, G

1.2.2 SD-06 Test Reports:

- a. Reports; Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports.", G
- b. Accident Reports, G
- c. Monthly Exposure Reports, G
- d. Crane Reports, G
- e. Regulatory Citations and Violations, G

1.2.3 SD-07 Certificates:

- a. Confined Space Entry Permit, G
- b. Hot work permit, G
- d. Contractor Safety Self-Evaluation Checklist; G
- e. Certificate of Compliance (Crane), G

Note: Submit one copy of each permit/certificate attached to each Daily Production Report.

1.3 DEFINITIONS:

a. Competent Person for Fall Protection. A person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as their application and use with related equipment, and has the authority to take prompt corrective measures to eliminate the hazards of falling.

b. High Visibility Accident. Any mishap which may generate publicity and/or high visibility.

c. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician or registered personnel.

d. Operating Envelope. The area surrounding any crane. Inside this "envelope" is the crane, the operator, riggers and crane walkers, rigging gear between the hook and the load, the load and the crane's supporting structure (ground, rail, etc.).

e. Qualified Person for Fall Protection. A person with a recognized degree or professional certificate, and with extensive knowledge, training and experience in the field of fall protection; who is capable of performing design, analysis, and evaluation of fall protection systems and equipment.

f. Recordable Injuries or Illnesses. Any work-related injury or illness that results in:

- (1) Death, regardless of the time between the injury and death, or the length of the illness;
- (2) Days away from work (any time lost after day of injury/illness onset);
- (3) Restricted work;
- (4) Transfer to another job;
- (5) Medical treatment beyond first aid;

(6) Loss of consciousness; or

(7) A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (1) through (6) above.

g. "USACE" property and equipment specified in USACE EM 385-1-1 should be interpreted as Government property and equipment.

h. Weight Handling Equipment (WHE) Accident. A WHE accident occurs when any one or more of the six elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; and/or collision, including unplanned contact between the load, crane, and/or other objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, roll over, etc.).

1.4 CONTRACTOR SAFETY SELF-EVALUATION CHECKLIST: Contracting Officer will provide a "Contractor Safety Self-Evaluation checklist" to the Contractor at the pre-construction conference. The checklist will be completed monthly by the Contractor and submitted with each request for payment voucher. An acceptable score of 90 or greater is required. Failure to submit the completed safety self-evaluation checklist or achieve a score of at least 90, will result in a retention of up to 10 percent of the voucher.

1.5 REGULATORY REQUIREMENTS: In addition to the detailed requirements included in the provisions of this contract, work performed shall comply with USACE EM 385-1-1, and the host nation laws, ordinances, criteria, rules and regulations for construction safety. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.6 SITE QUALIFICATIONS, DUTIES AND MEETINGS:

1.6.1 Personnel Qualifications:

1.6.1.1 Site Safety and Health Officer (SSHO): Site Safety and Health Officer (SSHO) shall be provided at the work site at all times to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The Contractor Quality Control (QC) person cannot be the SSHO on this project, even though the QC has safety inspection responsibilities as part of the QC duties. The SSHO shall be independent of all other duties and meet the following requirements:

a. An Associate Safety Professional (ASP), Certified Safety Trained Supervisor (STS) and/or Construction Health & Safety Technician (CHST) or certified Japanese equivalent certification.

b. A minimum of 10 years safety work of a progressive nature with at least 5 years of experience on similar projects. (Note 1)

c. 30-hour OSHA construction safety class or equivalent within the last 5 years.

d. An average of at least 24 hours of formal safety training each year for the past 5 years with training for competent person status for at least the following areas of competency: Excavation; Scaffolding; Fall protection; and personal protective equipment.

Note 1: Host Nation Safety training will be considered to meet this training requirement. The Japan Construction Safety and Health Association (JCSHA) provides the construction safety course "Kouji Shunin", or "Course for Construction Site Managers", which is an acceptable equivalent to the 30-Hour OSHA Construction Safety Course mentioned above. Completion of this training will fulfill the requirements of Item 2. This training can be viewed at the JCSHA website: <http://www.kensaibou.or.jp>

1.6.1.2 Competent Person for Confined Space Entry: Provide a competent person for confined space meeting the definition and requirements of EM 385-1-1.

Since this work involves marine operations that handle combustible or hazardous materials, this person shall be a NFPA certified marine chemist or Dai Nisyu Sanso Ketsubou Kiken Sagyo Syuninsya and applicable Japanese certifications related to handling combustible or hazardous materials.

1.6.1.3 Crane Operators: Crane operators shall meet the requirements in USACE EM 385-1-1, Section 16 and Appendix G. In addition, for mobile cranes with Original Equipment Manufacturer (OEM) rated capacities of 50,000 pounds or greater, crane operators shall be designated as qualified by a source that qualifies crane operators (i.e., union, a government agency, or and organization that tests and qualifies crane operators). Proof of current qualification shall be provided.

1.6.2 Personnel Duties:

1.6.2.1 Site Safety and Health Officer (SSHO)/Superintendent:

a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Safety inspection logs shall be attached to the Contractors' daily production report.

b. Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300 and Daily Production reports for prime and sub-contractors.

c. Maintain applicable safety reference material on the job site.

d. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.

e. Implement and enforce accepted APPS and AHAs.

f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. A list of unresolved safety and health deficiencies shall be posted on the safety bulletin board.

g. Ensure sub-contractor compliance with safety and health requirements.

Failure to perform the above duties will result in dismissal of the superintendent and/or SSHO, and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.

1.6.3 Meetings:

1.6.3.1 Preconstruction Conference:

a. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the preconstruction conference. This includes the project superintendent, site safety and health officer, quality control supervisor, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).

b. The Contractor shall discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will require an analysis. In addition, a schedule for the preparation, submittal, review, and acceptance of AHAs shall be established to preclude project delays.

c. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Work shall not begin until there is an accepted APP.

d. The functions of a Preconstruction conference may take place at the Post-Award Kickoff meeting for Design Build Contracts.

1.6.3.2 Safety Meetings: Shall be conducted and documented as required by EM 385-1-1. Minutes showing contract title, signatures of attendees and a list of topics discussed shall be attached to the Contractors' daily production report.

1.7 ACCIDENT PREVENTION PLAN (APP): The Contractor shall use a qualified person to prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of USACE EM 385-1-1 and as supplemented herein. Cover all paragraph and subparagraph elements in USACE EM 385-1-1, Appendix A, "Minimum Basic Outline for Accident Prevention Plan". Specific requirements for some of the APP elements are described below. The APP shall be job-specific and shall address any unusual or unique aspects of the project or activity for which it is written. The APP shall interface with the Contractor's overall safety and health program. Any portions of the Contractor's overall safety and health program referenced in the APP shall be included in the applicable APP element and made site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP shall be signed by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent, the designated site safety and health officer and any designated CSP and/or CIH.

Submit the APP to the Contracting Officer 15 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP.

Once accepted by the Contracting Officer, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and quality control manager. Should any hazard become evident, stop work in the area, secure the area, and develop a plan to remove the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate/remove the hazard. In the interim, all necessary action shall be taken to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public (as defined by ANSI/ASSE A10.34,) and the environment.

Copies of the accepted plan will be maintained at the Contracting Officer's office and at the job site. The APP shall be continuously reviewed and amended, as necessary, throughout the life of the contract. Unusual or high-hazard activities not identified in the original APP shall be incorporated in the plan as they are discovered.

1.7.1 EM 385-1-1 Contents: In addition to the requirements outlines in Appendix A of USACE EM 385-1-1, the following is required:

a. Names and qualifications (resumes including education, training, experience and certifications) of all site safety and health personnel designated to perform work on this project to include the designated site safety and health officer and other competent and qualified personnel to be used such as CSPs, CIHs, STSs, CHSTs. The duties of each position shall be specified.

b. Qualifications of competent and of qualified persons. As a minimum, competent persons shall be designated and qualifications submitted for each of the following major areas: excavation; scaffolding; fall protection; hazardous energy; confined space; health hazard recognition, evaluation and control of chemical, physical and biological agents; personal protective equipment and clothing to include selection, use and maintenance.

c. Confined Space Entry Plan. Develop a confined space entry plan in accordance with USACE EM 385-1-1, applicable OSHA standards 29 CFR 1910, 29 CFR 1915, and 29 CFR 1926, and any other federal, state and local regulatory requirements identified in this contract. Identify the qualified person's name and qualifications, training, and experience. Delineate the qualified person's authority to direct work stoppage in the event of hazardous conditions. Include procedure for rescue by contractor personnel and the coordination with emergency responders. (If there is no confined space work, include a statement that no confined space work exists and none will be created.)

d. Crane Critical Lift Plan. Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (lifts over 50 percent of the capacity of a barge mounted mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. The plan shall be submitted 15 calendar days prior to on-site work and include the requirements of USACE EM 385-1-1, paragraph 16.C.18. and the following:

(1) For lifts of personnel, the plan shall demonstrate compliance with the requirements of 29 CFR 1926.550(g).

(2) For barge mounted mobile cranes, barge stability calculations identifying barge list and trim based on anticipated loading; and load charts based on calculated list and trim. The amount of list and trim shall be within the crane manufacturer's requirements.

(3) The size and weight of the load to be lifted, including crane and rigging components that add to the weight. The OEM's maximum load capacities for the entire range of the lift shall also be provided.

(4) The lift geometry, including the crane position, boom length and angle, height of lift, and radius for the entire range of the lift. Applies to both single and tandem crane lifts.

(5) A rigging plan, showing the lift points, rigging gear, and rigging procedures.

(6) The environmental conditions under which lift operations are to be stopped.

e. Fall Protection and Prevention (FP&P) Plan. The plan shall be site specific and address all fall hazards in the work place and during different phases of construction. It shall address how to protect and prevent workers from falling to lower levels when they are exposed to fall hazards above 1.8 m (6 feet). A qualified person for fall protection shall prepare and sign the plan. The plan shall include fall protection and prevention systems, equipment and methods employed for every phase of work, responsibilities, assisted rescue, self-rescue and evacuation procedures, training requirements, and monitoring methods. Fall Protection and Prevention Plan shall be revised every six months for lengthy projects, reflecting any changes during the course of construction due to changes in personnel, equipment, systems or work habits. The accepted Fall Protection and Prevention Plan shall be kept and maintained at the job site for the duration of the project. The Fall Protection and Prevention Plan shall be included in the Accident Prevention Plan (APP).

1.8 ACTIVITY HAZARD ANALYSIS (AHA): The Activity Hazard Analysis (AHA) format shall be in accordance with USACE EM 385-1-1. Submit the AHA for review at least 15 calendar days prior to the start of each phase. Format subsequent AHAs as amendments to the APP. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.

The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.

The activity hazard analyses shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the contractor, supplier or subcontractor and provided to the prime contractor for submittal to the Contracting Officer.

1.9 DISPLAY OF SAFETY INFORMATION: Within 1 calendar days after commencement of work, erect a safety bulletin board at the job site. The safety bulletin board shall include information and be maintained as required by EM 385-1-1, section 01.A.06. Additional items required to be posted include:

- a. Confined space entry permit.
- b. Hot work permit.

1.10 SITE SAFETY REFERENCE MATERIALS: Maintain safety-related references applicable to the project, including those listed in the article "References." Maintain applicable equipment manufacturer's manuals.

1.11 EMERGENCY MEDICAL TREATMENT: Contractors will arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

1.12 REPORTS:

1.12.1 Accident Reports:

a. For recordable injuries and illnesses, and property damage accidents resulting in at least \$2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the Navy Contractor Significant Incident Report (CSIR) form and provide the report to the Contracting Officer within 5 calendar day(s) of the accident. The Contracting Officer will provide copies of any required or special forms.

b. For any weight handling equipment accident (including rigging gear accidents) the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the WHE Accident Report (Crane and Rigging Gear) form and provide the report to the Contracting Officer within 15 calendar days of the accident. Crane operations shall not proceed until cause is determined and corrective actions have been implemented to the satisfaction of the contracting officer. The Contracting Officer will provide a blank copy of the accident report form.

1.12.2 Accident Notification: Notify the Contracting Officer as soon as practical, but not later than four hours, after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than \$2,000, or any weight handling equipment accident. Information shall include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.

1.12.3 Monthly Exposure Reports: Monthly exposure reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

1.12.4 Crane Reports: Submit crane inspection reports required in accordance with USACE EM 385-1-1, Appendix H and as specified herein with Daily Reports of Inspections.

1.12.5 Certificate of Compliance: The Contractor shall provide a Certificate of Compliance for each crane entering an activity under this contract (see Contracting Officer for a blank certificate). Certificate shall state that the crane and rigging gear meet applicable OSHA regulations (with the SSHO citing which OSHA regulations are applicable, e.g., cranes used in construction, demolition, or maintenance shall comply with 29 CFR 1926 and USACE EM 385-1-1 section 16 and Appendix H. The SSHO will certify on the Certificate of Compliance that the crane operator(s) is qualified and trained in the operation of the crane to be used. For cranes at DOD activities in foreign countries, the SSHO shall certify that the crane and rigging gear conform to the appropriate host country safety standards. The SSHO shall also certify that all of its crane operators working on the DOD activity have been trained not to bypass safety devices and in the proper use of all safety devices (e.g., anti-two block devices) during lifting operations. These certifications shall be posted on the crane.

1.13 HOT WORK: Prior to performing "Hot Work" (welding, cutting, etc.) or operating other flame-producing/spark producing devices, a written permit shall be requested as directed during the Pre-Construction Conference. **CONTRACTORS ARE REQUIRED TO MEET ALL CRITERIA BEFORE A PERMIT IS ISSUED.** The Contractor will provide at least two (2) twenty (20) pound 4A:20 BC rated extinguishers for normal "Hot Work". All extinguishers shall be current inspection tagged, approved safety pin and tamper resistant seal. It is also mandatory to have a designated FIRE WATCH for any "Hot Work" done at this activity. The Fire Watch shall be trained in accordance with NFPA 51B and remain on-site for a minimum of 30 minutes after completion of the task or as specified on the hot work permit.

When starting work in the facility, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency phone number. **ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE RESPONSIBLE IMMEDIATELY.** Obtain services from a NFPA Certified Marine Chemist or Dai Nisyu Sanso Ketsubou Kiken Sagyo Syuninsya and applicable Japanese certifications related to hot work operation for "Hot Work" within or around flammable materials (such as fuel systems, welding/cutting on fuel pipes) or confined spaces (such as sewer wet wells, manholes, vaults, etc.) that have the potential for flammable or explosive atmospheres.

1.14 HIGH-VISIBILITY SAFETY APPAREL: The Contractor's workers, sub-contractors' workers, and visitors on construction jobsites shall wear vest with retroreflective and fluorescent material (ie. ANSI/ISEA 107-2004 Class II compliant orange mesh vests) in accordance with NAVFAC PAC INSTRUCTION 5100.4C.

PART 2 - PRODUCTS

2.1 CONFINED SPACE SIGNAGE: The Contractor shall provide permanent signs integral to or securely attached to access covers for new permit-required confined spaces. Signs wording: "DANGER--PERMIT-REQUIRED CONFINED SPACE - DO NOT ENTER -" in bold letters a minimum of 25 mm (one inch) in height and constructed to be clearly legible with all paint removed. The signal word "DANGER" shall be red and readable from 1.52 m (5 feet).

2.2 FALL PROTECTION ANCHORAGE: Fall protection anchorage, conforming to ANSI Z359.1, installed under the supervision of a qualified person in fall protection, shall be left in place for continued customer use and so identified by signage stating the capacity of the anchorage (strength and number of persons who may be tied-off to it at any one time).

PART 3 - EXECUTION

3.1 CONSTRUCTION AND/OR OTHER WORK: The Contractor shall comply with USACE EM 385-1-1, NFPA 241, the APP, the AHA, Federal and/or State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard shall prevail.

3.1.1 Hazardous Material Use: Each hazardous material must receive approval prior to being brought onto the job site or prior to any other use in connection with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material.

3.1.2 Hazardous Material Exclusions: Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with USACE EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocyanates, lead-based paint are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.

3.1.3 Unforeseen Hazardous Material: The design should have identified materials such as PCB, lead paint, and friable and non-friable asbestos. If additional material, not indicated, that may be hazardous to human health upon disturbance during construction operations is encountered, stop that portion of work and notify the Contracting Officer immediately. Within 14 calendar days the Government will determine if the material is hazardous. If material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to Contract Clauses entitled "CHANGES" and "DIFFERING SITE CONDITIONS."

3.2 PRE-OUTAGE COORDINATION MEETING: Contractors are required to apply for utility outages at least 15 days in advance. As a minimum, the request should include the location of the outage, utilities being affected, duration of outage and any necessary sketches. Special requirements for electrical outage requests are contained elsewhere in this specification section. Once approved, and prior to beginning work on the utility system requiring shut down, the Contractor shall attend a pre-outage coordination meeting with the Contracting Officer to review the scope of work and the lock-out/tag-out procedures for worker protection. No work will be performed on energized electrical circuits unless proof is provided that no other means exist.

3.3 FALL HAZARD PROTECTION AND PREVENTION PROGRAM: The Contractor shall establish a fall protection and prevention program, for the protection of all employees exposed to fall hazards. The program shall include company policy, identify responsibilities, education and training requirements, fall hazard identification, prevention and control measures, inspection, storage, care and maintenance of fall protection equipment and rescue and evacuation procedures.

3.3.1 Training: The Contractor shall institute a fall protection training program. As part of the Fall Hazard Protection and Prevention Program, the Contractor shall provide training for each employee who might be exposed to fall hazards. A competent person for fall protection shall provide the training. Training requirements shall be in accordance with USACE EM 385-1-1, section 21.A.16.

3.3.2 Fall Protection Equipment and Systems: The Contractor shall enforce use of the fall protection equipment and systems designated for each specific work activity in the Fall Protection and Prevention Plan and/or AHA at all times when an employee is exposed to a fall hazard. Employees shall be protected from fall hazards as specified in EM 385-1-1, section 21. In addition to the required fall protection systems, safety skiff, personal floatation devices, life rings etc., are required when working above or next to water in accordance with USACE EM 385-1-1, paragraphs 05.H. and 05.I. Personal fall arrest systems are required when working from an articulating or extendible boom, swing stages, or suspended platform. In addition, personal fall arrest systems are required when operating other equipment such as scissor lifts if the work platform is capable of being positioned outside the wheelbase. The need for tying-off in such equipment is to prevent ejection of the employee from the equipment during raising, lowering, or travel. Fall protection must comply with 29 CFR 1926.500, Subpart M, USACE EM 385-1-1 and ANSI A10.32.

3.3.2.1 Personal Fall Arrest Equipment: Personal fall arrest equipment, systems, subsystems, and components shall meet ANSI Z359.1. Only a full-body harness with a shock-absorbing lanyard or self-retracting lanyard is an acceptable personal fall arrest body support device. Body belts may only be used as a positioning device system (for uses such as steel reinforcing assembly and in addition to an approved fall arrest system). Harnesses shall have a fall arrest attachment affixed to the body support (usually a Dorsal D-ring) and specifically designated for attachment to the rest of the system. Only locking snap hooks and carabiners shall be used. Webbing, straps, and ropes shall be made of synthetic fiber. The maximum free fall distance when using fall arrest equipment shall not exceed 1.8 m (6 feet). The total fall distance and any swinging of the worker (pendulum-like motion) that can occur during a fall shall always be taken into consideration when attaching a person to a fall arrest system.

3.3.3 Fall Protection for Roofing Work: Fall protection controls shall be implemented based on the type of roof being constructed and work being performed. The roof area to be accessed shall be evaluated for its structural integrity including weight-bearing capabilities for the projected loading.

a. Low Sloped Roofs:

(1) For work within 1.8 m (6 feet) of an edge, on low-slope roofs, personnel shall be protected from falling by use of personal fall arrest systems, guardrails, or safety nets. A safety monitoring system is not adequate fall protection and is not authorized.

(2) For work greater than 1.8 m (6 feet) from an edge, warning lines shall be erected and installed in accordance with 29 CFR 1926.500 and USACE EM 385-1-1.

b. Steep-Sloped Roofs: Work on steep-sloped roofs requires a personal fall arrest system, guardrails with toe-boards, or safety nets. This requirement also includes residential or housing type construction.

3.3.4 Existing Anchorage: Existing anchorages, to be used for attachment of personal fall arrest equipment, shall be certified (or re-certified) by a qualified person for fall protection in accordance with ANSI Z359.1. Existing horizontal lifeline anchorages shall be certified (or re-certified) by a registered professional engineer with experience in designing horizontal lifeline systems.

3.3.5 Horizontal Lifelines: Horizontal lifelines shall be designed, installed, certified and used under the supervision of a qualified person for fall protection as part of a complete fall arrest system which maintains a safety factor of 2 (29 CFR 1926.500).

3.3.6 Guardrails and Safety Nets: Guardrails and safety nets shall be designed, installed and used in accordance with EM 385-1-1 and 29 CFR 1926 Subpart M.

3.3.7 Rescue and Evacuation Procedures: When personal fall arrest systems are used, the contractor must ensure that the mishap victim can self-rescue or can be rescued promptly should a fall occur. A Rescue and Evacuation Plan shall be prepared by the contractor and include a detailed discussion of the following: methods of rescue; methods of self-rescue; equipment used; training requirement; specialized training for the rescuers; procedures for requesting rescue and medical assistance; and transportation routes to a medical facility. The Rescue and Evacuation Plan shall be included in the Activity Hazard Analysis (AHA) for the phase of work, in the Fall Protection and Prevention (FP&P) Plan, and the Accident Prevention Plan (APP).

3.4 SCAFFOLDING: Employees shall be provided with a safe means of access to the work area on the scaffold. Climbing of any scaffold braces or supports not specifically designed for access is prohibited. Access to scaffold platforms greater than 6 m (20 feet) in height shall be accessed by use of a scaffold stair system. Vertical ladders commonly provided by scaffold system manufacturers shall not be used for accessing scaffold platforms greater than 6 m (20 feet) in height. The use of an adequate gate is required. Contractor shall ensure that employees are qualified to perform scaffold erection and dismantling. Do not use scaffold without the capability of supporting at least four times the maximum intended load or without appropriate fall protection as delineated in the accepted fall protection and prevention plan. Stationary scaffolds must be attached to structural building components to safeguard against tipping forward or backward. Special care shall be given to ensure scaffold systems are not overloaded. Side brackets used to extend scaffold platforms on self-supported scaffold systems for the storage of material is prohibited. The first tie-in shall be at the height equal to 4 times the width of the smallest dimension of the scaffold base. Work platforms shall be placed on mud sills. Scaffold or work platform erectors shall have fall protection during the erection and dismantling of scaffolding or work platforms that are more than six feet. Delineate fall protection requirements when working above six feet or above dangerous operations in the Fall Protection and Prevention (FP&P) Plan and Activity Hazard Analysis (AHA) for the phase of work.

3.4.1 Stilts: The use of stilts for gaining additional height in construction, renovation, repair or maintenance work is prohibited.

3.5 EQUIPMENT

3.5.1 Material Handling Equipment:

- a. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.
- b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions.
- c. Operators of forklifts or power industrial trucks shall be licensed in accordance with OSHA.

3.5.2 Weight Handling Equipment: Comply with CFASINST 11262.1H, Enclosure (10). If required, current CFAS Instruction and blank forms to be used to submission to the Government will be delivered to the Contractor by Construction Section, PM&E Br., FEAD, PWD Sasebo, NAVFAC FE.

- a. Cranes and derricks shall be equipped as specified in EM 385-1-1, section 16.
- b. The Contractor shall notify the Contracting Officer 15 days in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated. Prior to cranes entering federal activities, a Crane Access Permit must be obtained from the Contracting Officer. A copy of the permitting process will be provided at the Preconstruction Conference. Contractor's operator shall remain with the crane during the spot check.
- c. The Contractor shall comply with the crane manufacturer's specifications and limitations for erection and operation of cranes and hoists used in support of the work. Erection shall be performed under the supervision of a designated person (as defined in ASME B30.5). All testing shall be performed in accordance with the manufacturer's recommended procedures.
- d. The Contractor shall comply with ASME B30.5 for mobile and locomotive cranes, ASME B30.22 for articulating boom cranes, ASME B30.3 for construction tower cranes, and ASME B30.8 for floating cranes and floating derricks.
- e. Under no circumstance shall a Contractor make a lift at or above 90% of the cranes rated capacity in any configuration.

f. When operating in the vicinity of overhead transmission lines, operators and riggers shall be alert to this special hazard and shall follow the requirements of USACE EM 385-1-1 section 11 and ASME B30.5 or ASME B30.22 as applicable.

g. Crane suspended personnel work platforms (baskets) shall not be used unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Personnel shall not be lifted with a line hoist or friction crane.

h. Portable fire extinguishers shall be inspected, maintained, and recharged as specified in NFPA 10, Standard for Portable Fire Extinguishers.

i. All employees shall be kept clear of loads about to be lifted and of suspended loads.

j. The Contractor shall use cribbing when performing lifts on outriggers.

k. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.

l. A physical barricade must be positioned to prevent personnel from entering the counterweight swing (tail swing) area of the crane.

m. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall always be available for review by Contracting Officer personnel.

n. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available for review by Contracting Officer personnel.

o. Certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

p. Take steps to ensure that wind speed does not contribute to loss of control of the load during lifting operations. Prior to conducting lifting operations the contractor shall set a maximum wind speed at which a crane can be safely operated based on the equipment being used, the load being lifted, experience of operators and riggers, and hazards on the work site. This maximum wind speed determination shall be included as part of the activity hazard analysis plan for that operation.

3.5.3 Radiographic Testing Equipment: The requirements in PWD Sasebo Standard Operating Procedure "PRS SOP 001" will be applied to all contracts executed by PWD Sasebo that have radiographic testing requirements. If the contract requires radiographic testing, PWD Sasebo Standard Operating Procedure "PRS SOP 001" will be delivered to the Contractor for the reference by Construction Section, PM&E Br., FEAD, PWD Sasebo, NAVFAC FE. Then, following Contractor's actions shall be performed.

3.5.3.1 All contractors who have radiographic testing equipments must fill out Radiographic Survey Record enclosed in PWD Sasebo Standard Operating Procedure "PRS SOP 001" and submit it to the Contracting Officer at least seven calendar days prior to the test date. The Government will review for accuracy and completeness on submitted Radiographic Survey Record.

3.5.3.2 Comply with the references when using Japanese licensed radioactive material or machine sources of ionizing radiation on Government property.

3.5.3.3 Prior to starting any radiographic inspection, notify the SRF-JRMC quality assurance radiographic section, responsible for Radiological Affairs Safety Program (RASP), via the Contracting Officer at least seven calendar days prior to the start of inspection. Include Radiographic Survey Record with a sketch with all applicable blocks filled out.

3.5.3.4 Prior to starting any radiographic inspection, the SRF-JRMC quality assurance radiographic section shall review the parameters of the contractor's controlled area and, if required, establish additional controls/safety measures to ensure compliance with the references.

3.5.3.5 The Contractor shall allow the SRF-JRMC Supervisory RASP to perform surveys and inspections of equipment/vehicles used in the conduct of radiographic inspections to ensure compliance.

3.6 EXCAVATIONS: The competent person shall perform soil classification in accordance with 29 CFR 1926.

3.6.1 Utility Locations: Prior to digging, the appropriate digging permit must be obtained. All underground utilities in the work area must be positively identified by a private utility locating service in addition to any station locating service and coordinated with the station utility department. Any markings made during the utility investigation must be maintained throughout the contract.

3.6.2 Utility Location Verification: The Contractor must physically verify underground utility locations by hand digging using wood or fiberglass handled tools when any adjacent construction work is expected to come within three feet of the underground system. Digging within 0.61 m (2 feet) of a known utility must not be performed by means of mechanical equipment; hand digging shall be used. If construction is parallel to an existing utility the utility shall be exposed by hand digging every 30.5 m (100 feet) if parallel within 1.5 m (5 feet) of the excavation.

3.6.3 Shoring Systems: Trench and shoring systems must be identified in the accepted safety plan and AHA. Manufacture tabulated data and specifications or registered engineer tabulated data for shoring or benching systems shall be readily available on-site for review. Job-made shoring or shielding shall have the registered professional engineer stamp, specifications, and tabulated data. Extreme care must be used when excavating near direct burial electric underground cables.

3.6.4 Trenching Machinery: Trenching machines with digging chain drives shall be operated only when the spotters/laborers are in plain view of the operator. Operator and spotters/laborers shall be provided training on the hazards of the digging chain drives with emphasis on the distance that needs to be maintained when the digging chain is operating. Documentation of the training shall be kept on file at the project site.

3.7 UTILITIES WITHIN CONCRETE SLABS: Utilities located within concrete slabs or pier structures, bridges, and the like, are extremely difficult to identify due to the reinforcing steel used in the construction of these structures. Whenever contract work involves concrete chipping, saw cutting, or core drilling, the existing utility location must be coordinated with station utility departments in addition to a private locating service. Outages to isolate utility systems shall be used in circumstances where utilities are unable to be positively identified. The use of historical drawings does not alleviate the contractor from meeting this requirement.

3.8 ELECTRICAL:

3.8.1 Conduct of Electrical Work: Underground electrical spaces must be certified safe for entry before entering to conduct work. Cables that will be cut must be positively identified and de-energized prior to performing each cut. Positive cable identification must be made prior to submitting any outage request for electrical systems. Arrangements are to be coordinated with the Contracting Officer and Station Utilities for identification. The Contracting Officer will not accept an outage request until the Contractor satisfactorily documents that the circuits have been clearly identified. Perform all high voltage cable cutting remotely using hydraulic cutting tool. When racking in or live switching of circuit breakers, no additional person other than the switch operator will be allowed in the space during the actual operation. Plan so that work near energized parts is minimized to the fullest extent possible. Use of electrical outages clear of any energized electrical sources is the preferred method. When working in energized substations, only qualified electrical workers shall be permitted to enter. When work requires Contractor to work near energized circuits as defined by the NFPA 70, high voltage personnel must use personal protective equipment that includes, as a minimum, electrical hard hat, safety shoes, insulating gloves with leather protective sleeves, fire retarding shirts, coveralls, face shields, and safety glasses. In addition, provide electrical arc flash protection for personnel as required by NFPA 70E. Insulating blankets, hearing protection, and switching suits may also be required, depending on the specific job and as delineated in the Contractor's AHA.

3.8.2 Portable Extension Cords: Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered and protected from damage. All damaged extension cords shall be immediately removed from service. Portable extension cords shall meet the requirements of NFPA 70.

3.9 WORK IN CONFINED SPACES: The Contractor shall comply with the requirements in Section 06.I of USACE EM 385-1-1, OSHA 29 CFR 1910.146 and OSHA 29 CFR 1926.21(b)(6). Any potential for a hazard in the confined space requires a permit system to be used.

a. Entry Procedures. Prohibit entry into a confined space by personnel for any purpose, including hot work, until the qualified person has conducted appropriate tests to ensure the confined or enclosed space is safe for the work intended and that all potential hazards are controlled or eliminated and documented. (See Section 06.I.06 of USACE EM 385-1-1 for entry procedures.) All hazards pertaining to the space shall be reviewed with each employee during review of the AHA.

b. Forced air ventilation is required for all confined space entry operations and the minimum air exchange requirements must be maintained to ensure exposure to any hazardous atmosphere is kept below its' action level.

c. Sewer wet wells require continuous atmosphere monitoring with audible alarm for toxic gas detection.

--END OF SECTION--

SECTION 01 45 02

NAVFAC QUALITY CONTROL

PART 1 - GENERAL

1.1 REFERENCES: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.1.1 American Society Of Heating, Refrigerating And Air-Conditioning Engineers (ASHRAE):

ASHRAE 52.2 (2007; Interpretation 1: 2007) Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size

1.1.2 ASTM International (ASTM):

ASTM D 6245 (2007) Using Indoor Carbon Dioxide Concentrations to Evaluate Indoor Air Quality and Ventilation

ASTM D 6345 (1998; R 2003e1) Selection of Methods for Active, Integrative Sampling of Volatile Organic Compounds in Air

1.1.3 Sheet Metal And Air Conditioning Contractors' National Association (SMACNA):

SMACNA 1507 (1995) IAQ Guidance for Occupied Buildings Under Construction

1.1.4 U.S. Army Corps of Engineers (USACE) Manual:

EM 385-1-1 Safety and Health Requirements Manual
(15 Sep. 2008)

1.1.5 U.S. Green Building Council (USGBC)

LEED (2002; R 2005) Leadership in Energy and Environmental Design(tm) Green Building Rating System for New Construction (LEED-NC)

LEED Reference Guide (2005) LEED-NC Reference Guide for New Construction

1.2 SUBMITTALS: Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

1.2.1 SD-01 Preconstruction Submittals:

- a. Construction Quality Control (QC) Plan, G

Submit a Construction QC Plan prior to start of construction.

1.2.2 SD-07 Certificates:

- a. CA Resume, G

1.2.3 SD-10 Operation and Maintenance Data:

- a. Training Plan, G

For each training session submit dates, start and finish times, and locations; outline of the information to be presented; names and qualifications of the presenters; and list of texts and other materials required to support training.

1.3 INFORMATION FOR THE CONTRACTING OFFICER: Prior to commencing work on construction, the Contractor can obtain a single copy set of the current report forms from the Contracting Officer. The report forms will consist of the Contractor Production Report, Contractor Production Report (Continuation Sheet), Contractor Quality Control (CQC) Report, (CQC) Report (Continuation Sheet), Preparatory Phase Checklist, Initial Phase Checklist, Rework Items List, and Testing Plan and Log.

1.3.1 Deliver the following to the Contracting Officer during Construction:

a. CQC Report: Submit the report electronically by 10:00 AM the next working day after each day that work is performed and for every seven consecutive calendar days of no-work.

b. Contractor Production Report: Submit the report electronically by 10:00 AM the next working day after each day that work is performed and for every seven consecutive calendar days of no-work.

c. Preparatory Phase Checklist: Submit the report electronically in the same manner as the CQC Report for each Preparatory Phase held.

d. Initial Phase Checklist: Submit the report electronically in the same manner as the CQC Report for each Initial Phase held.

e. Field Test Reports: Within two working days after the test is performed, submit the report as an electronic attachment to the CQC Report.

f. Monthly Summary Report of Tests: Submit the report as an electronic attachment to the CQC Report at the end of each month.

g. Testing Plan and Log: Submit the report as an electronic attachment to the CQC Report, at the end of each month. A copy of the final Testing Plan and Log shall be provided to the OMSI preparer for inclusion into the OMSI documentation.

h. Rework Items List: Submit lists containing new entries daily, in the same manner as the CQC Report.

i. CQC Meeting Minutes: Within two working days after the meeting is held, submit the report as an electronic attachment to the CQC Report.

j. QC Certifications: As required by the paragraph entitled "QC Certifications."

1.4 QC PROGRAM REQUIREMENTS: Establish and maintain a QC program as described in this section. This QC program is a key element in meeting the objectives of NAVFAC Commissioning. The QC program consists of a QC Organization, QC Plan, QC Plan Meeting(s), a Coordination and Mutual Understanding Meeting, QC meetings, three phases of control, submittal review and approval, testing, completion inspections, and QC certifications and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations which comply with the requirements of this Contract. The QC program must cover on-site and off-site work and be keyed to the work sequence. No construction work or testing may be performed unless the QC Manager is on the work site. The QC Manager must report to an officer of the firm and not be subordinate to the Project Superintendent or the Project Manager. The QC Manager, Project Superintendent and Project Manager must work together effectively. Although the QC Manager is the primary individual responsible for quality control, all individuals will be held responsible for the quality of work on the job.

1.4.1 Commissioning: Commissioning (Cx) is a systematic process of ensuring that all building systems meet the requirements and perform interactively according to the Contract. The QC Program is a key to this process by coordinating, verifying and documenting measures to achieve the following objectives:

a. Verify and document that the applicable equipment and systems are installed in accordance with the design intent as expressed through the Contract and according to the manufacturer's recommendations and industry accepted minimum standards.

b. Verify and document that equipment and systems receive complete operational checkout by the installing contractors.

c. Verify and document proper performance of equipment and systems.

d. Verify that Operation and Maintenance (O&M) documentation is complete.

e. Verify and document that the Government's operating personnel are adequately trained.

1.4.2 Acceptance of the Construction Quality Control (QC) Plan: Acceptance of the QC Plan is required prior to the start of construction. The Contracting Officer reserves the right to require changes in the QC Plan and operations as necessary, including removal of personnel, to ensure the specified quality of work. The Contracting Officer reserves the right to interview any member of the QC organization at any time in order to verify the submitted qualifications. All QC organization personnel are subject to acceptance by the Contracting Officer. The Contracting Officer may require the removal of any individual for non-compliance with quality requirements specified in the Contract.

1.4.3 Preliminary Construction Work Authorized Prior to Acceptance: The only construction work that is authorized to proceed prior to the acceptance of the QC Plan is mobilization of storage and office trailers, temporary utilities, and surveying.

1.4.4 Notification of Changes: Notify the Contracting Officer, in writing, of any proposed changes in the QC Plan or changes to the QC organization personnel, a minimum of 10 work days prior to a proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

1.5 QC ORGANIZATION:

1.5.1 QC Manager:

1.5.1.1 Duties: Provide a QC Manager at the work site to implement and manage the QC program. In addition to implementing and managing the QC program, the QC Manager may perform the duties of Project Superintendent. The QC Manager is required to attend the partnering meetings, QC Plan Meetings, Coordination and Mutual Understanding Meeting, conduct the QC meetings, perform the three phases of control, perform submittal review and approval, ensure testing is performed and provide QC certifications and documentation required in this Contract. The QC Manager is responsible for managing and coordinating the three phases of control and documentation performed by testing laboratory personnel and any other inspection and testing personnel required by this Contract. The QC Manager is the manager of all QC activities.

1.5.1.2 Qualifications: An individual with a minimum of 5 years combined experience in the following positions: Project Superintendent, QC Manager, Project Manager, Project Engineer or Construction Manager on similar size and type construction contracts which included the major trades that are part of this Contract. The individual must have at least two years experience as a QC Manager. The individual must be familiar with the requirements of EM 385-1-1, and have experience in the areas of hazard identification, safety compliance, and sustainability.

1.5.2 LEED Commissioning Authority:

1.5.2.1 Duties: Provide a Commissioning Authority (CA) as key person for the Cx and documentation thereof, who is subordinate to the QC Manager. The CA directs and coordinates Cx activities and submits Cx reports to the Contracting Officer to meet the submittal and reporting requirements of the LEED EA Prerequisite Requirement for Fundamental Commissioning. The CA coordinates the actions of the QC Specialists, Testing Laboratory personnel, and other inspection and testing personnel required by this Contract for building Cx.

1.5.2.2 Qualifications: The CA must be certified as a commissioning professional by the Association of Energy Engineers (AEE), the Building Commissioning Association (BCA), the National Environmental Balancing Bureau (NEBB), or the University of Wisconsin - Madison (UWM). CA resume is required, providing education, experience and management capabilities on at least two similar size and type contracts. The CA may not have been involved with the project design, construction management, or supervision, and must be with a third-party firm that is not on the design team.

1.5.3 Construction Quality Management Training: In addition to the above experience and education requirements, the QC Manager must have completed the course entitled "Construction Quality Management (CQM) for Contractors." If the QC Manager does not have a current certification, they must obtain the CQM for Contractors course certification within 90 days of award. This course is periodically offered by the Naval Facilities Engineering Command and the Army Corps of Engineers. Contact the Contracting Officer for information on the next scheduled class.

1.5.4 Alternate QC Manager Duties and Qualifications: Designate an alternate for the QC Manager at the work site to serve in the event of the designated QC Manager's absence. The period of absence may not exceed two weeks at one time, and not more than 30 workdays during a calendar year. The qualification requirements for the Alternate QC Manager must be the same as for the QC Manager.

1.6 QUALITY CONTROL (QC) PLAN:

1.6.1 Construction Quality Control (QC) Plan:

1.6.1.1 Requirements: Provide, for acceptance by the Contracting Officer, a Construction QC Plan submitted in a three-ring binder that includes a table of contents, with major sections identified with tabs, with pages numbered sequentially, and that documents the proposed methods and responsibilities for accomplishing commissioning activities during the construction of the project:

- a. QC ORGANIZATION: A chart showing the QC organizational structure.
- b. NAMES AND QUALIFICATIONS: Names and qualifications, in resume format, for each person in the QC organization. Include the CQM for Contractors course certifications for the QC Manager and Alternate QC Manager as required by the paragraphs entitled "Construction Quality Management Training" and "Alternate QC Manager Duties and Qualifications".
- c. DUTIES, RESPONSIBILITY AND AUTHORITY OF QC PERSONNEL: Duties, responsibilities, and authorities of each person in the QC organization.
- d. OUTSIDE ORGANIZATIONS: A listing of outside organizations, such as architectural and consulting engineering firms, that will be employed by the Contractor and a description of the services these firms will provide.
- e. APPOINTMENT LETTERS: Letters signed by an officer of the firm appointing the QC Manager and Alternate QC Manager and stating that they are responsible for implementing and managing the QC program as described in this Contract. Include in this letter the responsibility of the QC Manager and Alternate QC Manager to implement and manage the three phases of control, and their authority to stop work which is not in compliance with the Contract. Letters of direction are to be issued by the QC Manager to all other QC Specialists outlining their duties, authorities, and responsibilities. Include copies of the letters in the QC Plan.
- f. SUBMITTAL PROCEDURES AND INITIAL SUBMITTAL REGISTER: Procedures for reviewing, approving, and managing submittals. Provide the name(s) of the person(s) in the QC organization authorized to review and certify submittals prior to approval. Provide the initial submittal of the Submittal Register as specified in Section 01 33 00 SUBMITTAL PROCEDURES.
- g. TESTING LABORATORY INFORMATION: Testing laboratory information required by the paragraphs entitled "Accreditation Requirements", as applicable.

h. TESTING PLAN AND LOG: A Testing Plan and Log that includes the tests required, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test. Use Government forms to log and track tests.

i. PROCEDURES TO COMPLETE REWORK ITEMS: Procedures to identify, record, track, and complete rework items. Use Government forms to record and track rework items.

j. DOCUMENTATION PROCEDURES: Use Government form.

k. LIST OF DEFINABLE FEATURES: A Definable Feature of Work (DFOW) is a task that is separate and distinct from other tasks and has control requirements and work crews unique to that task. A DFOW is identified by different trades or disciplines and is an item or activity on the construction schedule

l. PROCEDURES FOR PERFORMING THE THREE PHASES OF CONTROL: Identify procedures used to ensure the three phases of control to manage the quality on this project. For each DFOW, a Preparatory and Initial phase checklist will be filled out during the Preparatory and Initial phase meetings. Conduct the Preparatory and Initial Phases and meetings with a view towards obtaining quality construction by planning ahead and identifying potential problems for each DFOW.

m. PERSONNEL MATRIX: Not Applicable

n. PROCEDURES FOR COMPLETION INSPECTION: Not Applicable

o. TRAINING PROCEDURES AND TRAINING LOG: Procedures for coordinating and documenting the training of personnel required by the Contract. Include a sample record of training for reporting what systems were included in the training, who provided the training, when and where the training was performed and who attended the training.

p. ORGANIZATION AND PERSONNEL CERTIFICATIONS LOG: Procedures for coordinating, tracking and documenting all certifications on subcontractors, testing laboratories, suppliers, personnel, etc. QC Manager will ensure that certifications are current, appropriate for the work being performed, and will not lapse during any period of the contract that the work is being performed.

1.7 QC PLAN MEETINGS: At the descretion of the FEAD and prior to submission of the QC Plan, the QC Manager will meet with the Contracting Officer to discuss the QC Plan requirements of this Contract. The purpose of this meeting is to develop a mutual understanding of the QC Plan requirements prior to plan development and submission and to agree on the Contractor's list of DFOWs.

1.8 COORDINATION AND MUTUAL UNDERSTANDING MEETING: After submission of the QC Plan, and prior to the start of construction, the QC Manager will meet with the Contracting Officer to present the QC program required by this Contract. When a new QC Manager is appointed, the coordination and mutual understanding meeting shall be repeated.

1.8.1 Purpose: The purpose of this meeting is to develop a mutual understanding of the QC details, including documentation, administration for on-site and off-site work, design intent, Cx, environmental requirements and procedures, coordination of activities to be performed, and the coordination of the Contractor's management, production, and QC personnel. At the meeting, the Contractor will be required to explain in detail how three phases of control will be implemented for each DFOW, as well as how each DFOW will be affected by each management plan or requirement as listed below:

- a. Waste Management Plan
- b. IAQ Management Plan
- c. Procedures for noise and acoustics management
- d. Environmental Protection Plan
- e. Environmental regulatory requirements
- f. Cx Plan

1.8.2 Coordination of Activities: Coordinate activities included in various sections to assure efficient and orderly installation of each component. Coordinate operations included under different sections that are dependent on each other for proper installation and operation. Schedule construction operations with consideration for indoor air quality as specified in the IAQ Management Plan. Coordinate prefunctional tests and startup testing with Cx.

1.8.3 Attendees: As a minimum, the Contractor's personnel required to attend include an officer of the firm, the Project Manager, Project Superintendent, QC Manager, Alternate QC Manager, CA, Environmental Manager, and subcontractor representatives. Each subcontractor who will be assigned QC responsibilities shall have a principal of the firm at the meeting. Minutes of the meeting will be prepared by the QC Manager and signed by the Contractor and the Contracting Officer. Provide a copy of the signed minutes to all attendees and shall be included in the QC Plan.

1.9 QC MEETINGS: After the start of construction, conduct QC meetings once every two weeks by the QC Manager at the work site with the Project Superintendent, the CA, and the foremen who are performing the work of the DFOs. The QC Manager is to prepare the minutes of the meeting and provide a copy to the Contracting Officer within two working days after the meeting. The Contracting Officer may attend these meetings. As a minimum, accomplish the following at each meeting:

- a. Review the minutes of the previous meeting.
- b. Review the schedule and the status of work and rework.
- c. Review the status of submittals.
- d. Review the work to be accomplished in the next two weeks and documentation required.
- e. Resolve QC and production problems (RFI, etc.).
- f. Address items that may require revising the QC Plan.
- g. Review Accident Prevention Plan (APP).
- h. Review environmental requirements and procedures.
- i. Review Waste Management Plan.
- j. Review IAQ Management Plan.
- k. Review Environmental Management Plan.
- l. Review the status of training completion.
- m. Review Cx Plan and progress.

1.10 DESIGN REVIEW AND DOCUMENTATION:

1.10.1 Basis of Design and Design Intent: Review the basis of design received from the Contracting Officer and the design intent.

1.10.2 Design Review: Review design documents to verify that each commissioned system meets the design intent relative to functionality, energy performance, water performance, maintainability, sustainability, system cost, indoor environmental quality, and local environmental impacts. Fully document review in written report.

1.10.3 Contract Document Review: Review the Contract documents to verify that Cx is adequately specified, and that each commissioned system is likely to meet the design intent relative to functionality, energy performance, water performance, maintainability, sustainability, system cost, indoor environmental quality, and local environmental impacts.

1.11 THREE PHASES OF CONTROL: Adequately cover both on-site and off-site work with the Three Phases of Control and include the following for each DFW.

1.11.1 Preparatory Phase: Notify the Contracting Officer at least two work days in advance of each preparatory phase meeting. The meeting will be conducted by the QC Manager and attended by the Project Superintendent, the CA, and the foreman responsible for the DFW. When the DFW will be accomplished by a subcontractor, that subcontractor's foreman shall attend the preparatory phase meeting. Document the results of the preparatory phase actions in the daily CQC Report and in the Preparatory Phase Checklist. Perform the following prior to beginning work on each DFW:

- a. Review each paragraph of the applicable specification sections.
- b. Review the Contract drawings.
- c. Verify that field measurements are as indicated on construction and/or shop drawings before confirming product orders, in order to minimize waste due to excessive materials.
- d. Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required.
- e. Review the testing plan and ensure that provisions have been made to provide the required QC testing.
- f. Examine the work area to ensure that the required preliminary work has been completed.
- g. Coordinate the schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- h. Arrange for the return of shipping/packaging materials, such as wood pallets, where economically feasible.
- i. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data.
- j. Discuss specific controls used and construction methods, construction tolerances, workmanship standards, and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each DFW.
- k. Review the APP and appropriate Activity Hazard Analysis (AHA) to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted.
- l. Review the Cx Plan and ensure all preliminary work items have been completed and documented.

1.11.2 Initial Phase: Notify the Contracting Officer at least two work days in advance of each initial phase. When construction crews are ready to start work on a DFW, conduct the initial phase with the Project Superintendent, and the foreman responsible for that DFW. Observe the initial segment of the DFW to ensure that the work complies with Contract requirements. Document the results of the initial phase in the daily CQC Report and in the Initial Phase Checklist. Repeat the initial phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met. Perform the following for each DFW:

- a. Establish the quality of workmanship required.

- b. Resolve conflicts.
- c. Ensure that testing is performed by the approved laboratory.
- d. Check work procedures for compliance with the APP and the appropriate AHA to ensure that applicable safety requirements are met.
- e. Review the Cx Plan and ensure all preparatory work items have been completed and documented.

1.11.3 Follow-Up Phase: Perform the following for on-going work daily, or more frequently as necessary, until the completion of each DFOW and document in the daily CQC Report:

- a. Ensure the work is in compliance with Contract requirements.
- b. Maintain the quality of workmanship required.
- c. Ensure that testing is performed by the approved laboratory.
- d. Ensure that rework items are being corrected.
- e. Assure manufacturers representatives have performed necessary inspections if required and perform safety inspections.
- f. Review the Cx Plan and ensure all work items, testing, and documentation has been completed.

1.11.4 Additional Preparatory and Initial Phases: Conduct additional preparatory and initial phases on the same DFOW if the quality of on-going work is unacceptable, if there are changes in the applicable QC organization, if there are changes in the on-site production supervision or work crew, if work on a DFOW is resumed after substantial period of inactivity, or if other problems develop.

1.11.5 Notification of Three Phases of Control for Off-Site Work: Notify the Contracting Officer at least two weeks prior to the start of the preparatory and initial phases.

1.12 SUBMITTAL REVIEW AND APPROVAL: Procedures for submission, review and approval of submittals are described in Section 01 33 00 SUBMITTAL PROCEDURES.

1.13 TESTING: Except as stated otherwise in the specification sections, perform sampling and testing required under this Contract.

1.13.1 Accreditation Requirements: Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation. The laboratory's scope of accreditation must include the appropriate ASTM standards (E 329, C 1077, D 3666, D 3740, A 880, E 543) listed in the technical sections of the specifications. Laboratories engaged in Hazardous Materials Testing shall meet the requirements of OSHA and EPA. The policy applies to the specific laboratory performing the actual testing, not just the Corporate Office.

1.13.2 Laboratory Accreditation Authorities: Laboratory Accreditation Authorities include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology at <http://ts.nist.gov/ts/htdocs/210/214/214.htm>, the American Association of State Highway and Transportation Officials (AASHTO) program at <http://www.transportation.org/aashto/home.nsf/frontpage>, International Accreditation Services, Inc. (IAS) at <http://www.iasonline.org>, U. S. Army Corps of Engineers Materials Testing Center (MTC) at <http://www.wes.army.mil/SL/MTC/>, the American Association for Laboratory Accreditation (A2LA) program at <http://www.a2la.org/>, the Washington Association of Building Officials (WABO) at <http://www.wabo.org/> (Approval authority for WABO is limited to projects within Washington State), and the Washington Area Council of Engineering Laboratories (WACEL) at <http://www.wacel.org/labaccred.html> (Approval authority by WACEL is limited to projects within Facilities Engineering Command (FEC) Washington geographical area).

1.13.3 Capability Check: The Contracting Officer retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this Contract.

1.13.4 Test Results: Cite applicable Contract requirements, tests or analytical procedures used. Provide actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. If the item fails to conform, notify the Contracting Officer immediately. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable. Test results must be signed by a testing laboratory representative authorized to sign certified test reports. Furnish the signed reports, certifications, and other documentation to the Contracting Officer via the QC Manager. Furnish a summary report of field tests at the end of each month, per the paragraph entitled "INFORMATION FOR THE CONTRACTING OFFICER".

1.13.5 Test Reports and Monthly Summary Report of Tests: Furnish the signed reports, certifications, and a summary report of field tests at the end of each month to the Contracting Officer. Attach a copy of the summary report to the last daily Contractor Quality Control Report of each month. Provide a copy of the signed test reports and certifications to the OMSI preparer for inclusion into the OMSI documentation.

1.14 QC CERTIFICATIONS:

1.14.1 CQC Report Certification: Contain the following statement within the CQC Report: "On behalf of the Contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge, except as noted in this report."

1.14.2 Invoice Certification: Furnish a certificate to the Contracting Officer with each payment request, signed by the QC Manager, attesting that as-built drawings are current, coordinated and attesting that the work for which payment is requested, including stored material, is in compliance with Contract requirements.

1.14.3 Completion Certification: Upon completion of work under this Contract, the QC Manager shall furnish a certificate to the Contracting Officer attesting that "the work has been completed, inspected, tested and is in compliance with the Contract." Provide a copy of this final QC Certification for completion to the OMSI preparer for inclusion into the OMSI documentation.

1.15 COMPLETION INSPECTIONS:

1.15.1 Punch-Out Inspection: Near the completion of all work or any increment thereof, established by a completion time stated in the Contract Clause entitled "COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK," or stated elsewhere in the specifications, the QC Manager and the CA must conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings, specifications and Contract. Include in the punch list any remaining items on the "Rework Items List", which were not corrected prior to the Punch-Out Inspection. Include within the punch list the estimated date by which the deficiencies will be corrected. Provide a copy of the punch list to the Contracting Officer. The QC Manager, or staff, must make follow-on inspections to ascertain that all deficiencies have been corrected. Once this is accomplished, notify the Government that the facility is ready for the Government "Pre-Final Inspection".

1.15.2 Pre-Final Inspection: The Government and QCM will perform this inspection to verify that the facility is complete and ready to be occupied. A Government "Pre-Final Punch List" will be documented by the CQM as a result of this inspection. The QC Manager will ensure that all items on this list are corrected prior to notifying the Government that a "Final" inspection with the Client can be scheduled. Any items noted on the "Pre-Final" inspection must be corrected in a timely manner and be accomplished before the contract completion date for the work, or any particular increment thereof, if the project is divided into increments by separate completion dates.

1.15.3 Final Acceptance Inspection: Notify the Contracting Officer at least 14 calendar days prior to the date a final acceptance inspection can be held. State within the notice that all items previously identified on the pre-final punch list will be corrected and acceptable, along with any other unfinished Contract work, by the date of the final acceptance inspection. The Contractor must be represented by the QC Manager, the Project Superintendent, the CA, and others deemed necessary. Attendees for the Government will include the Contracting Officer, other FEAD personnel, and personnel representing the Client. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the Contract Clause entitled "INSPECTION OF CONSTRUCTION."

1.16 TRAINING: Prior to acceptance of the facility by the Contracting Officer for beneficial occupancy, the Contractor must provide a comprehensive project-specific Government personnel training program for the systems and equipment of the facility specified in the technical specifications of this Contract. The trainees must include the Contracting Officer, facilities managers, maintenance staff, and building occupants. The Contractor is responsible for coordinating, scheduling, and ensuring that training is completed. Instructors shall be well-versed in the particular systems that they are presenting. Provide instruction time on site at a location approved by the Contracting Officer.

1.16.1 Training Plan: Submit a written training plan to the Contracting Officer and CA for review and approval prior to training. Coordinated and scheduled the training with the Contracting Officer and CA. Include within the plan the following elements:

- a. Equipment included in training
- b. Intended audience
- c. Location of training
- d. Objectives
- e. Subjects covered including description
- f. Duration of training on each subject
- g. Methods (classroom lecture, video, site walk-through, actual operational demonstrations, written handouts, etc.)
- h. Instructor and instructor qualifications for each subject

1.16.2 Content: Stress and enhance the importance of system interactions, troubleshooting, and long-term preventative maintenance and operation. The core of this training will be based on manufacturer's recommendations and the operation and maintenance information provided as a part of this Contract. A review of environmentally-related aspects of the Operation and Maintenance Manuals shall be included. Include the following for each commissioned system:

- a. Design intent
- b. Use of O&M Manuals
- c. Review of control drawings and schematics
- d. Start-up, normal operation, shutdown, unoccupied operation, seasonal changeover, manual operation, controls set-up and programming, troubleshooting, and alarms
- e. Interactions with other systems
- f. Adjustments and optimizing methods for energy conservation
- g. Relevant health and safety issues
- h. Special maintenance and replacement sources
- i. Tenant interaction issues
- j. Discussion of how the feature or system is environmentally responsive

1.16.3 Training Outline: The CA is responsible for overseeing and approving the content and adequacy of the training. The CA must interview the Government facilities manager and Contracting Officer to determine the special needs and areas where training will be most valuable. The Contracting Officer and CA must decide how rigorous the training should be for each piece of equipment. The CA is to communicate the results to the Contractor, who will provide each trainee in the course a written course outline, listing the major and minor topics to be discussed by the instructor on each day of the course.

1.16.4 Video Recording: Provide to the Contracting Officer two copies of the training course in DVD or VHS video recording format, and add one copy to the O&M manual data. Capture within the recording, in video and audio, all instructors' training presentations including question and answer periods with the trainees. Videotaping of the training sessions shall be provided by the Contractor.

1.16.5 Unresolved Questions From Trainees: If, at the end of the training course, there are questions from trainees that remain unresolved, the instructor will send the answers, in writing, to the Contracting Officer for transmittal to the trainees, and the training video should be modified to include the appropriate clarifications.

1.16.6 Validation of Training Completion: Develop criteria for determining that the training was satisfactorily completed, including attending some of the training, and upon fulfillment of the criteria, validate training completion. The CA will then recommend approval of the training to the Contracting Officer using a standard form and the CA and Contracting Officer will sign the approval form. Provide completed and signed validation of training forms as provided in the QC Plan for all training sessions accomplished. Provide two copies of the signed training validation forms to the Contracting Officer and one copy to the OMSI preparer for inclusion into the OMSI documentation.

1.17 DOCUMENTATION: Maintain current and complete records of on-site and off-site QC program operations and activities.

1.17.1 Construction Documentation: Reports are required for each day that work is performed and must accompany the submission of the Contractor Quality Control Report prepared for the same day. Maintain current and complete records of on-site and off-site QC program operations and activities. The forms identified under the paragraph "INFORMATION FOR THE CONTRACTING OFFICER" will be used. Reports are required for each day work is performed. Account for each calendar day throughout the life of the Contract. Every space on the forms must be filled in. Use N/A if nothing can be reported in one of the spaces. The Project Superintendent and the QC Manager must prepare and sign the Contractor Production and CQC Reports, respectively. The reporting of work must be identified by terminology consistent with the construction schedule. In the "remarks" sections of the reports, enter pertinent information including directions received, problems encountered during construction, work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered and a record of visitors to the work site, quality control problem areas, deviations from the QC Plan, construction deficiencies encountered, meetings held. For each entry in the report(s), identify the Schedule Activity No. that is associated with the entered remark.

1.17.2 Quality Control Validation: Establish and maintain the following in a series of three ring binders. Binders shall be divided and tabbed as shown below. These binders must be readily available to the Contracting Officer during all business hours.

- a. All completed Preparatory and Initial Phase Checklists, arranged by specification section.
- b. All milestone inspections, arranged by Activity Number.
- c. An up-to-date copy of the Testing Plan and Log with supporting field test reports, arranged by specification section.
- d. Copies of all contract modifications, arranged in numerical order. Also include documentation that modified work was accomplished.
- e. An up-to-date copy of the Rework Items List.
- f. Maintain up-to-date copies of all punch lists issued by the QC staff to the Contractor and Sub-Contractors and all punch lists issued by the Government.
- g. Commissioning documentation including Cx checklists, schedules, tests, and reports.

1.17.3 Testing Plan and Log: As tests are performed, the CA and the QC Manager will record on the "Testing Plan and Log" the date the test was performed and the date the test results were forwarded to the Contracting Officer. Attach a copy of the updated "Testing Plan and Log" to the last daily CQC Report of each month, per the paragraph "INFORMATION FOR THE CONTRACTING OFFICER". Provide a copy of the final "Testing Plan and Log" to the OMSI preparer for inclusion into the OMSI documentation.

1.17.5 Rework Items List: The QC Manager must maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, the date the item will be corrected by, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. The Contractor is responsible for including those items identified by the Contracting Officer.

1.17.6 As-Built Drawings: The QC Manager is required to ensure the as-built drawings are kept current on a daily basis and marked to show deviations which have been made from the Contract drawings. Ensure each deviation has been identified with the appropriate modifying documentation (e.g. PC No., Modification No., Request for Information No., etc.). The QC Manager must initial each revision. Upon completion of work, the QC Manager will furnish a certificate attesting to the accuracy of the as-built drawings prior to submission to the Contracting Officer.

1.18 NOTIFICATION ON NON-COMPLIANCE: The Contracting Officer will notify the Contractor of any detected non-compliance with the Contract. Take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders will be made the subject of claim for extension of time for excess costs or damages by the Contractor.

1.19 CORRESPONDING GRAPHIC: This section has a corresponding graphic called "quality_control_reports.pdf." To download UFGS graphics, go to <http://www.wbdg.org/ccb/NAVGRAPH/graphdoc.pdf>.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 PREPARATION: Designate receiving/storage areas for incoming material to be delivered according to installation schedule and to be placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. Store and handle materials in a manner as to prevent loss from weather and other damage. Keep materials, products, and accessories covered and off the ground, and store in a dry, secure area. Prevent contact with material that may cause corrosion, discoloration, or staining. Protect all materials and installations from damage by the activities of other trades.

--END OF SECTION--

SECTION 01 57 19

ENVIRONMENTAL PROTECTION

PART 1 - GENERAL

1.1 REFERENCES: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.1.1 Japanese Laws:

No. 85-72	The National Environment Conservation Act
No. 98 (Rev. 1968)	Noise Regulation Law
No. 132 (Rev. 1967)	Basic law for Environmental Pollution Control
No. 136 (Rev. 1970)	Law Relating to the Prevention of Marine Pollution and Maritime Disaster
No. 137 (Rev. 1970)	Waste Disposal and Public Cleansing Law
No. 138 (Rev. 1970)	Water Pollution Control Law
No. 139	The Agricultural Soil Pollution Prevention Act

1.1.2 DOD Japanese Environmental Governing Standards (JEKS):

JEKS 2008

1.1.3 Nagasaki Prefectural Office's Publication:

"NAGASAKI-KEN KOHGAI BOHSHI JYOREI (Revised date 24th Nov 1999)"
(Pollution Control Laws and Official Regulations)

1.1.4 U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) Regulation:

29 CFR 1910.94 Occupational Health and Environmental Control.

1.2 DEFINITIONS:

1.2.1 Sediment: Soil and other debris that have eroded and have been transported by runoff water or wind.

1.2.2 Silt: Any earthy material composed of fine particles, as soil or sand, suspended in or deposited by water.

1.2.3 Sludge: Mud, mire, or ooze covering the ground or forming a deposit at the bottom of bodies of water.

1.2.4 Solid Waste: Rubbish, debris, garbage, and other discarded solid materials, except hazardous waste as defined in paragraph entitled, "Hazardous Waste," resulting from industrial, commercial, and agricultural operations and from community activities.

1.2.5 Rubbish: Combustible and noncombustible wastes such as paper, boxes, glass, crockery, metal, lumber, cans, and bones.

1.2.6 Debris: Combustible and noncombustible wastes such as ashes and waste materials resulting from construction or maintenance and repair work, leaves, and tree trimmings.

1.2.7 Chemical Waste and Hazardous Waste: These include salts, acids, alkalis, herbicides, pesticides, organic chemicals and other hazardous substances as defined in applicable regulations contained in the laws listed in paragraph 1.1.1 in this Section, Section 01 57 19.

1.2.8 Sanitary Wastes:

1.2.8.1 Sewage: Waste Characterized as domestic sanitary sewage.

1.2.8.2 Garbage: Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

1.2.9 Hazardous Waste: Hazardous substances in JL No.137 as defined, and consumption of food.

1.2.10 Oily Waste: Petroleum products and bituminous materials.

1.3 SUBMITTALS:

1.3.1 Environmental Protection Plan: Submit two copies of the proposed environmental protection plan, not later than 14 calendar days after the meeting with the Contracting Officer to discuss the development of an environmental protection plan.

1.3.2 Preconstruction Survey Report: Submit two copies of the preconstruction survey report.

1.3.3 Solid Waste Disposal Permit: Submit one copy of Japanese local permit and license showing such agencies' approval of the disposal plan.

1.4 ENVIRONMENTAL PROTECTION REQUIREMENTS: Provide and maintain, during the life of the contract, environmental protection as defined herein. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with Japanese and local regulations pertaining to the environment, including but not limited to Japanese laws listed in Paragraph 1.1.1 in this Section.

1.4.1 Environmental Protection Plan Meeting: Seven calendar days after the award of contract, the Contractor shall meet with the Contracting Officer to discuss the proposed environmental protection plan and to develop mutual understanding relative to the details of environmental protection, including measures for protecting, required reports, and other measures to be taken.

1.4.2 Commencement of the Work: Prior to the commencement of the work, submit the proposed environmental protection plan to the Contracting Officer as required in paragraph 1.3.1 and shall be approved by the Contracting Officer.

1.4.3 Preconstruction Survey: Perform a preconstruction survey of the project site with the Contracting Officer, and take photographs showing existing environmental conditions in and adjacent to the site.

PART 2 - EXECUTION

2.1 PROTECTION OF NATURAL RESOURCES: Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work. Confine construction activities to within the limits of the work indicated or specified.

2.1.1 Land Resources: Except in areas to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without the Contracting Officer's permission. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages, unless authorized by the Contracting Officer. Where such use of attach ropes, cables, or guys is authorized, the Contractor shall be responsible for any resultant damage.

2.1.2 Protection: Protect existing trees which are to remain and which may be injured, bruised, defaced, or otherwise damaged by construction operations.

2.1.2.2 Repair or Restoration: Repair or restore to their original condition all trees, shrubs, pavement or any landscape features scarred damaged by equipment or operations. Obtain approval of the repair or restoration from the Contracting Officer prior to its initiation.

2.1.2.3 Temporary Construction:; Remove traces of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other signs of construction. Grade temporary roads, parking areas, and similar temporarily used areas to conform with surrounding contours.

a. Temporary Work: Obliterate all signs of temporary work, if any.

2.1.3 Water Resources: Perform all work in such a manner that any adverse environmental impact on water resources is reduced to a level acceptable to the Contracting Officer.

2.1.3.1 Fish and Wildlife Resources: Do not disturb fish wildlife. Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish an wildlife, except as indicated or specified.

2.1.3.2 Silt Screen: Provide silt screen when removing barnacles or other marine species; depositing rubble stone base course; installing and removing formwork; injecting concrete or epoxy rein fillers to voids and cracks; or any work that will disturb the water resources.

2.1.4 Oily Substances: Take special measures to prevent oil and other hazardous substances from entering the ground, drainage areas, or to the sea. When removing fuel oil pipelines ensure that a shut-off valve has been installed at the point of disconnection, and provide the necessary spill kit to prevent ground and water contamination.

2.2 HISTORICAL AND ARCHAEOLOGICAL RESOURCES: Carefully protect in-place and report immediately to the Contracting Officer historical and archaeological items or human skeletal remains discovered in the course of work. Stop work in the immediate area of the discovery until directed by the Contracting Officer to resume work.

2.3 EROSION AND SEDIMENT CONTROL MEASURES:

2.3.1 Burnoff: Burnoff of the ground cover is not permitted.

2.4 DUST CONTROL: Keep dust down at all times, including during nonworking periods. Sprinkle with water, the soil at the site. Dry power brooming will not be permitted. Instead, use wet mopping, wet sweeping, or wet power brooming. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous concrete. Do not unnecessarily shake bags of cement, concrete mortar, or plaster.

2.5 WATER JET CLEANING/WATERBLASTING: Provide proper precautions which will prevent the contaminated water, resulted from water jet or waterblasting operation for concrete surface cleaning, from flowing into the water. The Contractor shall strictly follow the Japanese and local regulations pertaining to environmental pollution.

2.6 DISPOSAL REQUIREMENTS: Collect dust and other debris resulting from concrete surface cleaning operations and store in drums with watertight lids. Take a representative sample of this material, and test for environmental protection (EP) toxicity with respect to lead, chromium, and cadmium content. The sampling and testing shall be performed in accordance with JL 137-70.

2.7 HAZARDOUS WASTE DISPOSAL: Dispose of hazardous waste in accordance with local regulations listed under paragraphs "Japanese Laws" through "DOD Final Governing Standards:."

2.7.1 Oily Substance Disposal: Dispose oily substances recovered from fuel oil pipelines, in accordance with the Japanese and local regulations.

2.8 SPILLAGE:

2.8.1 Spill Responsibility: The Contractor is solely responsible for any and all spills or leaks during the performance of the contract. The Contractor agrees to clean up such spills or leaks, at no cost to the Government, to the satisfaction of the authorities where the spill occurs, in accordance with applicable Government of Japan (GOJ) laws and local regulations.

2.8.2 Spill Reporting: The Contractor is responsible for reporting to the Contracting Officer all spills or leaks, regardless of quantity, that occur within the U.S. Government controlled areas. The Contractor shall also report on all personnel exposed to the spill or leak. All spill/leak reports shall first be reported by telephone immediately following the incident and shall be followed up in writing no later than seven calendar days after the initial telephone report.

2.8.3 Spill Telephone Report Numbers: The following telephone numbers shall be utilized for all spill/leak reports:

<u>WHOM TO NOTIFY</u>	<u>PHONE NUMBER</u>	<u>NOTIFICATION TIMES</u>	<u>DAYS</u>
CONTRACTING OFFICER	252-3461/2395	08:00 - 16:45	M-F(*1)
PUBLIC WORKS OFFICER	252-3452/3463	08:00 - 16:45	M-F
COMMAND DUTY OFFICER	252-3311/3442	00:00 - 08:00 16:45 - 24:00 24 HOUR PERIOD 24 HOUR PERIOD	M-F M-F S-S(*2) HOLIDAYS

Note:

*1: Monday through Friday

*2: Sunday through Saturday

--END OF SECTION--

SECTION 01 58 00

PROJECT IDENTIFICATION

PART 1 - GENERAL

1.1 REFERENCES: The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

1.1.1 American Wood-Preservers' Association (AWPA):

AWPA C1 (2003) All Timber Products - Preservative Treatment by Pressure Processes

AWPA C2 (2003) Lumber, Timber, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes

1.2 PROJECT SIGN: Prior to initiating any work on site, provide one project identification sign at the location designated if provision is required by the Contracting Officer. Construct the sign in accordance with project sign detail shown in project_sign_details.pdf. Maintain sign throughout the life of the project. Upon completion of the project, remove the sign from the site

1.4.1 Project Identification Signboard (Navy): A project identification signboard shall be provided in accordance with Plates 1, 3, and 4 shown in project_sign_details.pdf. Provide preliminary drawing indicating layout and text content. The signboard shall be provided at a conspicuous location on the job site where directed by the Contracting Officer.

a. The field of the sign shall consist of a 1200 by 2400 mm sheet of grade B-B medium density overlaid exterior plywood.

b. Lumber shall be B or better Southern pine, pressure-preservative treated in accordance with AWPA C1 and AWPA C2. Nails shall be aluminum or galvanized steel.

c. The entire signboard and supports shall be given one coat of exterior alkyd primer and two coats of exterior alkyd enamel paint. The lettering and sign work shall be performed by a skilled sign painter using paint known in the trade as bulletin colors. The colors, lettering sizes, and lettering styles shall be as indicated. Where preservative-treated lumber is required, utilize only cured pressure-treated wood which has had the chemicals leached from the surface of the wood prior to painting.

d. Use spray applied automotive quality high gloss acrylic white enamel paint as background for the NAVFAC logo. NAVFAC logo shall be an applied 2 millimeter film sticker/decal with either transparent or white background or paint the logo by stencil onto the sign. The weather resistant sticker/decal film shall be rated for a minimum of 2-year exterior vertical exposure. The self-adhering sticker shall be mounted to the sign with pressure sensitive, permanent acrylic adhesive. Shop cut sticker/decal to rectangular shape and provide pull-off backing sheet on adhesive side of design sticker for shipping.

e. Sign paint colors (manufacturer's numbers/types listed below for color identification only)

(1) Blue = To match dark blue color in the NAVFAC logo.

(2) White = To match Brilliant White color in the NAVFAC logo.

f. NAVFAC logo must retain proportions and design integrity. NAVFAC logos in electronic format may be obtained from the NAVFAC web portal via the following link:

https://portal.navy.mil/portal/page?_pageid=181,3465071&_dad=portal&_schema=PORTAL

Use the following to choose color values for the paint to be used:

- (1) Dark Blue = equivalent to CMYK values 100, 72, 0, 8 .
- (2) Light Blue = equivalent to CMYK values 69, 34, 0, 0.
- (3) Cyan = equivalent to CMYK values 100, 9, 0, 6.
- (4) Yellow = equivalent to CMYK values 0.9,94, 0.

1.5 CORRESPONDING GRAPHIC: This section has a corresponding graphic called "project_sign_details.pdf."
To download UFGS graphics, go to <http://www.wbdg.org/ccb/NAVGRAPH/graphdoc.pdf>.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

--END OF SECTION--

SECTION 01 73 00

TECHNICAL REQUIREMENTS FOR DESIGN

PART 1 - GENERAL

1.1 DESIGN REQUIREMENTS: Design and construct new facilities in conformity with publications and guides as required in 50T_Trolley_Replacement_Spec_OH-9-1_Sasebo.doc.

PART 2 - PRODUCTS

2.1 MATERIALS: All materials shall be furnished by the Contractor and shall conform to the respective requirements in 50T_Trolley_Replacement_Spec_OH-9-1_Sasebo.doc.

PART 3 - EXECUTION

3.1 DEMOLITION AND REMOVAL: Do not begin demolition until authorization is received from the Contracting Officer. Except as specified otherwise, all materials resulting from demolition work shall become the property of the Contractor and shall be removed from the limits of Government controlled area. Remove rubbish and debris from the project site daily; do not allow accumulations inside or outside the building. Store materials that cannot be removed daily in areas specified by the Contracting Officer. Submit proposed demolition and removal procedures to the Contracting Officer for approval at least 14 calendar days before work is started.

3.1.1 Cleanup and Disposal: Comply with local hauling and disposal regulations, Prefectural hauling and disposal regulations and hauling and disposal regulations of Government of Japan. The name of the waste generator and the location at which the waste was generated shall be clearly indicated on the outside of each container. Prevent contamination of the transport vehicle.

3.1.1.1 Disposal Records: Completed and signed manifests for industrial solid wastes and hazardous wastes from treatment or disposal facility shall be submitted as written evidence that the landfill for disposal is approved for industrial solid wastes and hazardous wastes disposal. Submit to the Contracting Officer, manifests signed and dated by an agent of the landfill, certifying the amount of industrial solid wastes and hazardous wastes delivered to the landfill, by the time of As-Built Records submission.

3.2 EXECUTION REQUIREMENTS: References shall be made to 50T_Trolley_Replacement_Spec_OH-9-1_Sasebo.doc.

3.3 SUBMITTALS: Design submittals shall be including design identifying the work to be done, work layout and the equipment selected, including necessary design drawings, samples, catalog cuts and calculation sheets. References shall be made to 50T_Trolley_Replacement_Spec_OH-9-1_Sasebo.doc.

3.4 INSPECTION AND TESTING: All contract work shall be inspected by the Contracting Officer's Inspector as specified herein and as directed. All defects disclosed by tests shall be rectified and the test repeated. References shall be made to 50T_Trolley_Replacement_Spec_OH-9-1_Sasebo.doc.

--END OF SECTION--

**DESIGN AND INSTALLATION OF OVERHEAD BRIDGE CRANE HOIST/TROLLEY
ASSEMBLIES**

SASEBO

NAVAL SHIP REPAIR FACILITY (NSRF)

YOKOSUKA, JAPAN

TECHNICAL SPECIFICATION

1 GENERAL REQUIREMENTS

1.1 BACKGROUND. The intent of this design build specification is to replace an existing 50/25 metric ton capacity electric hoist/trolley and controls on the overhead bridge crane # OH-9-1 located in building 480 of SRF-JRMC Detachment in Sasebo Japan. The existing double girder bridge frame structure provided by Ishikawajima Heavy Industries Co., Ltd. shall be utilized, but modification of existing footwalks and handrails must be performed to maintain safe access as necessary.

1.2 CRANE SUMMARY.

110,231/55,115 lbs OET bridge crane (OH-9-1)

Span:	7050 mm
Runway Length:	66.03 m (approximately)
Capacity:	Main Hoist: 110,231 lbs, Auxiliary Hoist: 55,115 lbs
Crane type:	Top running bridge, double girder OET with top running trolley/hoist
Crane and Hoist Classification:	CMAA 70, Class D or JIS C9620, Grade M6
Bridge High Speed:	2.5 – 25 m/min, Inverter control
Crane Drive:	Variable Frequency Drives (VFD) with VFD rated motors
Trolley Low-High Speed:	1.0 – 10 m/min
Trolley Drive:	V/F Control
Hoist Low-High Speed:	0.32 – 4.5 m/min (Main), Inverter control
Hoist Low-High Speed:	0.48 – 7.5 m/min (Auxiliary), Inverter control
Hoist Type:	V/F Control with Dynamic braking (Currently Open Loop)
Hoist lift required:	7.942 m (Main), 8.722m (Auxiliary)
Control:	Pendant control from independent track on bridge
Power Supply:	440-volt, 3-phase with grounding wire, 60-hertz

1.3 SCOPE. The Contractor shall furnish all labor, management, supervision, tools, materials, equipment, incidental engineering, and transportation necessary to design, fabricate, and install the new hoist/trolley and to test one (1) bridge crane. Remove the existing main/auxiliary hoist/trolley unit from the subject OET crane (OH-9-1) and install new package hoist/trolley and install new disconnect switch and runway conductors (Bridge Electrification) to provide sufficient capacity for simultaneous operation of all crane functions. The intent is to minimize the Contractor's overall on-site time and space requirements in order to minimize disruption to ongoing production activities. The crane shall be designed and built in compliance with all federal regulations, Crane Construction Standards, and Japan Industrial Standard (JIS) applicable to this equipment and it shall be installed, tested and fully operational upon completion of the project.

1.4 CONTRACTOR DELIVERY AND PICKUP. The new hoist/trolley shall be delivered, installed, and tested in Building 480 at NSRF/JRMC Detachment Sasebo, Japan. The Contractor shall be solely responsible for the delivery and pickup of all Contractor equipment, material, and supplies to and from NSRF-JRMC Detachment Sasebo work site. Ten (10) days prior to arrival at NSRF/JRMC Detachment Sasebo, the Contractor shall submit in writing to the Government Representative, the make, model, and capacity for any crane/equipment to be used on site during the accomplishment of this contract. **(Submittal)**

1.5 APPLICABLE STANDARDS. The crane and all work shall be in accordance with all applicable requirements ("shall" statements) and recommendations ("should" statements) of

current revisions of OSHA, ASME B30.2, B30.10, HST-4, and CMAA 70 except as specifically modified herein. Furnished equipment shall comply in all respects with the following standards: National Electric Manufacturer's Association (NEMA) and the National Electric Code (NEC), or Japan Industrial Standards (JIS), JIS B 8801, JIS B 8821, JIS C 9620, Crane Construction Standards in Japan, Japanese Electrical Committee Standard (JEC) and Japan Electrical Manufacture's Standard (JEM).

1.6 MATERIALS. The following materials shall be used. Materials shall be free from all defects and imperfections that might affect the serviceability and appearance of the finished product. All material provided shall be "new and unused".

Components

Material

Wheels (Trolley)

Forged/wrought steel (stamped steel wheels are prohibited)

Hooks

Forged Carbon or Alloy Steel with a minimum elongation of 18% in 2 inches

1.6.1 General. Provide materials and equipment which are standard products of manufactures regularly engaged in the fabrication of complete and totally functional cranes including necessary ancillary equipment.

1.6.2 Prohibited Use of Asbestos Products. Provide materials and products, required for designing and manufacturing cranes, which do not contain asbestos.

1.6.3 Ductile Materials. All non-redundant components directly supporting the load shall be of ductile materials. These components include, but are not limited to all hoist drive gear reducer housings, motor frames and end bells, flanged adapters, and brake wheels and discs. For the purposes of this specification ductile is defined as having a minimum elongation of 5% in 2 inches. Furthermore, all shafts, keys, gears, torque carrying coupling components, and wire rope drum shall be steel.

1.6.4 Safety Warnings. Affix labels in a readable position to each lift block or control pendant in accordance with ASME B30.2. Submit safety warnings, diagrams and other framed instructions suitably framed and protected for display as indicated by the Contracting Officer as follows:

a. Design and locate the word "WARNING" or other legend to bring the label to the attention of the operator. Provide durable type warning labels and display the following information concerning safe-operating procedures: Cautionary language against lifting more than the rated load; operating the hoist when the hook is not centered under the hoist; operating hoist with twisted, kinked or damaged rope; operating damaged or malfunctioning hoist; operating a rope hoist with a rope that is not properly seated in its hoist drum groove; lifting people; lifting loads over people; and removing or obscuring the warning label.

1.7 ENGINEERING CHANGE PROPOSALS. The Contractor shall not incorporate any engineering changes in, nor deviate from this specification without prior written authorization from the Government Representative. All desired engineering changes and deviations from the requirements of this Contract shall be formally submitted for approval of the Government Representative. **(Submittal)**

1.8 PROPRIETARY MARKINGS. All contract-required submittals (drawings, calculations, and technical info) shall be supplied without "proprietary" markings or statements. The Government shall have full rights to use, reproduce, "build from", modify, copy, and release all submitted information.

1.9 SUBMITTALS. Any Government comments on submittals shall be corrected and the submittal resubmitted by the Contractor within ten (10) working days of receipt of Government comments. The Government has ten (10) working days to return comments to the Contractor. If further comment rounds are required, both Contractor and Government shall continue to reply within ten (10) working days.

1.10 LEAD. Building 480 structure and the crane are painted with what is suspected to be lead base paint and any work that will disturb this paint shall be treated as "Lead Work" and the following applies. Some material containing lead (MCL) removal may not require implementation of the requirements of 29CFR 1926.62. Based on the experience of the Contractor and/or the use of a specific process or method for performing the work, the Contractor may be able to provide historic data (previous 12 months) to demonstrate that airborne exposures are controlled below the action level. Documentation of such methods or controls shall be presented to the Government Representative. In order to reduce the full implementation of 29CFR 1926.61, the Contractor shall provide documentation in an Assessment Data Report. **(Submittal)**

If implementation of 29CFR 1926.62 is required, then the contractor shall ensure the following:

- a) Be aware of the potential hazard to his/her employees and Navy personnel.
- b) Comply with local, state, and federal regulations to protect his/her employees, as well as Navy personnel.
- c) Control lead dust outside the work boundary to less than 30 micrograms per cubic meter at all times, and shall do sufficient monitoring to confirm this level of control is maintained. In addition, the controlled work area(s) shall meet this criterion prior to release for unrestricted access. Contractors shall provide copies of their monitoring results to the cognizant industrial hygienist (SRF-JRMC, Code 140) via the Government Representative within 3 working days of collection. **(Submittal)**
- d) Provide for frequent and regular inspections of the job site, materials, and equipment by a competent person.
- e) Submit a written plan to include at least the following: **(Submittal)**
 1. A description of each activity in which lead is emitted (e.g., equipment used, material involved, controls in place, crew size, employee job responsibilities, operating procedures, and maintenance practices).
 2. A description of the specific means that will be employed to achieve compliance and, where engineering controls are required, engineering plans and studies used to determine methods selected for controlling lead.
 3. A report of the technology considered in meeting the required standard.
 4. Air monitoring data that documents the source of lead emissions.
 5. Schedule for implementation of the lead program, including training certifications and medical qualifications.

6. A description of arrangements made among contractors on multi-contractor sites with respect to informing affected employees and Navy personnel of potential exposure to lead.

1.11 ACCESS FOR INSPECTIONS. The Contractor shall provide, upon request, access (via man lift, Aerial Work Platform, etc.) for Government personnel to observe and inspect all areas of the crane during installation and testing.

1.12 EQUIPMENT OPERATOR QUALIFICATIONS. All Contractor/Subcontractor personnel who will operate forklifts, manlifts, mobile cranes, and/or bridge cranes at SRF-JRMC, Yokosuka are required to provide a current operators license for that equipment or an alternative certification of operating qualifications. Submission of operating credentials shall be made to the Government Representative two days prior to operating the equipment on-site. Certification may be provided by any of the following three options: **(Submittal)**

- a) Proof of a union operator's card covering the subject equipment.
- b) Certificate from a qualified training facility.
- c) Letter from the Contractor, on company letterhead, stating the operator's qualifications. This can be based on past experience, noting the estimated hours of operation of the specific equipment type.

1.13 CONTRACTOR PRODUCTION REPORT. The Contractor shall complete and submit regular Contractor Production Reports during the life of this contract. For the duration of design and fabrication activities conducted at the Contractor/Subcontractor facility, the reporting period shall be monthly. For the duration of erection, installation, and testing activities conducted at the SRF-JRMC Yokosuka work site, the reporting period shall be weekly. Reports shall be submitted to the Government Representative. **(Submittal)**

1.14 GOVERNMENT REVIEW. Government review and approval of submittals, certifications, and schedules does not relieve or reduce the Contractors obligation to comply with all contract requirements. Any errors or contract non-compliant issues found after government approval shall be corrected by the Contractor.

1.15 DISPOSAL. The Contractor is to carefully remove existing motors, brakes, control panels, and other electrical equipment from the existing crane as required by the scope of work. The Contractor shall dispose of all other equipment, including the removed crane components. Disposal of general waste generated as part of this contract, shall be the responsibility of the Contractor.

1.16 SUPPORTING INFORMATION. Refer to attached enclosure (1) for the general assembly drawing and electrical wiring diagram to modify the existing crane. It shall be the responsibility of the Contractor to obtain any needed design information concerning the existing crane such as dead load, wheel loads, etc.

1.17 REGULATORY REQUIREMENTS. All new functions and components shall comply with all Occupational Safety and Health Administration (OSHA) and other listed references in this specification. Anchorages shall be provided on the trolley. Anchorages to which personnel fall arrest equipment is attached shall be capable of supporting at least 5,000 pounds per person attached, or it must be designed, installed, and used as part of a complete personal fall arrest system which maintains a design factor of at least 2.0 under the supervision of a qualified person as required by 29 CFR 1910.66.

Attach a permanent label at each anchorage point identifying it as a "Fall Protection Anchorage Point" listing its capacity (e.g. one person capacity).

Couplings with exposed bolts or nuts (non-safety type), if used, shall be provided with guards. The guards shall be removable type and allow for a visual inspection of the covered component when installed. The guards shall be securely fastened and shall be capable of supporting, without permanent deformation, the weight of a 200-pound person, unless the guard is located where it is impossible for a person to step on it.

2 DESIGN REQUIREMENTS

2.1 GENERAL DESIGN

2.1.1 Periodic Load Testing. The crane must be capable of periodic (twice yearly) 131.25% overload testing. Contractor shall certify that the crane components affected by the scope of work and their support systems are capable of being periodically load tested to 131.25% of its rated capacity without detrimental effects. **(Submittal)**

2.1.2 Emergency-Stop (E-stop). The crane components affected by the scope of work (structural, mechanical and electrical) shall be designed so that the E-stop button may be pushed during any operating mode (up to and including full speed and full load) without detrimental effects on the crane or loss of load control. **(Submittal)**

2.1.3 Environment. The new hoist/trolley and any replaced or added components shall be designed for use in an indoor environment with ambient temperatures of 5° to 40° Centigrade (23° to 100° Fahrenheit).

2.1.4 Electrical Supply. The new hoist/trolley and any replaced or added components shall be designed to operate on 440-volt, 3-phase with equipment grounding conductor, 60-hertz, alternating current (AC). The crane electrical installation shall comply with all applicable sections of the Crane Manufacturers Association of America (CMAA) 70, and MIL-C-82017C, and the National Electric Code or Crane Construction Standards, JIS, JEC and JEM.

2.1.5 Clearance Envelope and Hook Coverage. The existing crane with new hoist/trolley shall fit into the existing crane envelope without requiring modifications to the building. See Enclosure (1) for a general dimension sketch. The contractor shall make a site check to field verify all existing dimensions on these drawings and to determine the best way of designing, shipping and erecting the new hoist/trolley. The hook coverage (side to side) provided by the new hoist/trolley shall meet or exceed the existing coverage. The Contractor shall measure and record hook approaches of existing crane before it is removed. **(Submittal)**

2.2 STRUCTURAL REQUIREMENTS

2.2.1 Contractor needs to provide updated structural calculations in accordance with the structural calculation standards for cranes of CMAA 70, Construction Code for Cranes in Japan, and JIS B8821 to verify the capacity of existing endstops and bumpers and verifying existing crane will support additional trolley weight. **(Submittal)**

2.2.2 Maximum Wheel Loads.

2.2.2 Maximum Wheel Loads. The bridge crane with new hoist/trolley shall be capable of operating on the existing rail system. The contractor shall perform calculations to ensure that new crane wheel loading and impact to building and supporting structure does not exceed that of the existing crane's loading. The existing crane's maximum wheel load at 125% rated load is 35,009 kilograms (77,180 Pounds) spaced 4,200 millimeters (165.35 inches) apart. The self-weight of all components of the existing unit is 24,900 (includes hoist/trolley) Kilograms. The data required for this evaluation is provided in the attachments.

2.2.3 Trolley end stops. The contractor shall remove the existing (wheel contact type) trolley end stops and design, fabricate, and install new set of end stops.

End stops shall be compatible with trolley bumpers, and they shall be designed to withstand those forces of the fully loaded trolley at 100% rated speed (power off). The recommended increase in allowable stresses for this case is 50%. The Contractor shall submit calculations verifying the design of the end stops. **(Submittal)**

2.2.4 Welding. All welding on the crane shall comply with AWS D14.1. All welding on the building structure, including runway stops, electrification hangers, etc., shall comply with AWS D1.1 or relevant JIS Z (Such as 3001, 3021, 3400, 3410, 3200, 3201, 3607, and G 3503 & 3523, and B 6801 & 6802,..etc).

2.2.5 Trolley Rails. The new hoist/trolley shall be installed onto the existing 70 mm² rails on 2.3 meter span.

2.2.6 Lugs. The new hoist/trolley frames shall have safety drop lugs to limit the drop of the hoist/trolley to 1 inch (25 mm) in case of wheel, axle, or bearing breakage.

2.2.7 Paint. The new hoist/trolley and any replaced or added components shall be painted using the Contractor's standard paint system. The color shall be brilliant yellow; the load block (excluding hook and nut) shall be brilliant yellow with black diagonal striping. All accessible fasteners shall be painted after final installation. All paint systems brought into the SRF-JRMC, Detachment Sasebo site shall be approved by the Government. Hook, hook nut, wire rope, sheave grooves, wire rope drum grooves wheel treads and other components/surfaces that are subjected to normal wear, shall remain unpainted. The primer coat and the finish coat of paint shall be smooth, even and free of runs, sags, orange peel, or other defects. Care shall be taken to preclude painting over non-painted surfaces. Any painted over grease fittings must be replaced; they may not be cleaned and reused. The painting system shall consist of anti-corrosive primers and 2 coats of acrylic epoxy gloss (cosmetic) topcoat. Primers and topcoats shall be the products of the same manufacturer. The use of paint containing any amounts of lead or mercury or chromates shall be prohibited. The primer and finish coats shall be identified in both the technical manual and drawings. Contractor shall submit color code or standard number. Contractor shall submit the painting system. **(Submittal)**

2.2.8 Clearance from obstruction. Minimum clearance of 3 inches overhead and 2 inches laterally shall be provided and maintained between crane and obstructions.

2.2.9 Major Components Attachments for Lifting and Handling. Major components (e.g trolley) shall be designed with structural or mechanical attachment points (lifting lugs, safety hoist rings, hoist rings or approved equivalent) when they are to be lifted or handled for

installation. The contractor shall install the new hoist/trolley in accordance with an approved Crane Installation Plan. Onsite changes to the approved lifting plan shall be presented to the contracting officer's representative (or designee) for review prior to lift. **(Submittal)**

Lifting of any major components (e.g, trolley, large components without integral lift points) shall be considered critical, and lift plans shall comply with the requirements of paragraph 1.7.2.e of the NAVFAC P-307. When the installation plan requires lifting or handling of major components, rigging by choking or sweeping using synthetic products, wire rope or chain is not allowed unless specific approval is obtained. Rigging gear shall only be attached to major components using designed attachment points. Tilting of lifted or suspended components during installation when necessary shall only be accomplished using chain-falls, ratchet hoists or similar equipments and only in a controlled manner following approved written documentation. "Lifting" is not exclusive to cranes and can include use of any mechanized lifting device.

2.2.10 Walkways. The trolley shall be provided with handrails and kickplates meeting OSHA requirements. Modification of existing footwalks and handrails must be performed to maintain safe access as necessary between the trolley and the existing footwalk. The existing walkway shall be modified to increase stiffness in the walkway by reducing the deck plate panel size by half using structural members similar to existing for intermediate members. Anchorage tie-off points shall be added to the existing walkway to support a 5000 lb load.

2.3 MECHANICAL REQUIREMENTS

2.3.1 Hoist/Trolley Mechanical Design. The mechanical design of the crane shall conform to CMAA #70, ASME B30.2, and other requirements specified herein. All drives which are not direct-connected with shafts in line shall be driven through gears. Retaining rings shall not be relied upon for axial retention of sheave pins or bearings on pins and axles; they shall be permitted only on standard commercial assemblies. Press fits shall not be relied upon for transmission of torque, except where permitted in travel drives. Cotter pins shall be permitted only for locking nuts against loosening and for retaining pins in standard commercial brake assemblies. The new hoist/trolley shall be designed to operate on the existing bridge rails.

2.3.2 Hoist Drum. The drum shall be a one-piece steel weldment, finish-machined after all welding and stress relieving has been completed, and drum design shall be in accordance with CMAA#70 section 4.6 or equivalent JIS standard as permitted. The drum shall include integral stub shafts or shaft hubs for through shafts as required. Drum shall not be mounted in a three bearing configuration. The drum shall be designed such that all hoisting rope is wound in a single layer and not less than two dead wraps of hoisting rope will remain on each end when the hook is in its extreme low position. Drum grooves shall be helical and machined right and left hand for double wire rope reeving. Minimum drum groove depth and pitch shall be in accordance with the recommendations in CMAA #70. The minimum pitch diameter of drums shall be in accordance with CMAA #70, Table 4.6.4-1.

2.3.3 Brakes. Each hoist shall be equipped with two independent and separate electro-mechanical brakes, each with a minimum torque rating of 130% of the rated motor torque. The brake torque settings shall be adjustable. Each brake shall also be able to independently hold the test load. Hoist brake shall be provided with a manual lever type, self-return to ON, release mechanism. Maintained OFF, release mechanisms are not permitted. All hoist brakes shall be designed to permit easy access for inspection and adjustment. The brakes shall be designated as primary and secondary brakes with the secondary brake being mounted closest to the wire rope drum in the drive train. The primary brake shall set after the controller has brought the load

to a controlled stop when the master switch has been placed in the off position. The secondary brake shall be designed to set 1-3 seconds (adjustable time delay) after the time it takes the primary brake to normally apply. An uninterruptible power supply (UPS) shall not be used to create the secondary brake time delay. In the event the controller system fails or an emergency stop condition is employed, the primary brake shall apply immediately; however, the time delay associated with the setting of the secondary brake shall still exist.

The trolley drive shall be provided with electro-mechanical brakes, that are spring applied, electrically released. Each brake shall have a minimum torque rating equal to 50% of the drive motor rated torque, and the torque setting shall be adjustable. Each brake shall be equipped with a manual self-return to ON brake release. The brakes shall be designed to permit easy access for adjustment and inspection for wear and/or setting of the friction discs.

Prior to the load test, the Contractor shall disassemble each brake to show the torque setting, air gap, plunger stroke, lining thickness, etc. for Government inspection and recording.

(Submittal)

2.3.3.1 Friction Material. All brakes shall be supplied with asbestos free friction material. The Contractor shall provide a certification for each brake that states that its friction material is asbestos free. **(Submittal)**

2.3.3.2 Adjustment. All brakes shall be properly adjusted for their application. The Contractor shall provide a brake adjustment record for each brake on the crane. The record shall include the location of the brake, the brake manufacturer, model number, serial number, the manufacturer's required settings and dimensions with tolerances, the actual setting and dimensions. **(Submittal)**

2.3.4 Wire Rope. The drum line pull shall not be more than 20% of the nominal breaking strength of the wire rope to obtain a minimum wire rope design factor of 5 to 1. The hoisting rope shall be 6 x 36 class construction, extra improved plow steel or extra-extra improved plow steel, regular lay, uncoated, with an independent wire rope core or OEM's recommended equivalent type. Wire rope shall be in accordance with all requirements of ASTM A1023/A or equivalent JIS standard. Hoisting rope dead end connections to equalizer bar (if used) shall be by means of poured socket connections or swaged fittings installed in a manner that develops the full breaking strength of the hoisting rope. The sockets shall be forged steel. Swaged connections used on the wire rope shall have a minimum of three destructive test samples demonstrating that the published efficiency for the swaged connection used is achieved (i.e., the swaged socket develops 100 percent efficiency) on all samples. Wire rope pulling out of the swage socket is an unacceptable test result. Wedge sockets shall be prohibited on wire rope. The rope shall be lightly coated with the Contractor's recommended lubricant. Wire rope ends at the drum shall be anchored by means of swaged fittings or by clamping. Clamped hoisting rope ends shall be neatly and securely seized with wire. The hoist shall be double reeved. The Contractor shall provide documentation of the actual wire rope breaking strength of a sample taken from the wire rope reel, and the test report (pass or fail) for swaged socket (if used). **(Submittal)**

2.3.5 Hook, Hook Nut and Hook Block. The hook shall be single barb forged steel conforming to ASTM A668 or ASTM A521 or equivalent JIS standard with a longitudinal elongation of not less than 18% in 2 inches. The hook nut shall be secured to the hook by a commercial standard removable and reusable means (tack-welding is prohibited). The hook shall be provided with a safety latch. The hook and hook nut shall not be painted or plated. Load blocks shall be entirely of steel construction. The designs shall preclude the wire rope from being cut, pinched,

crushed, or chafed in case of two-blocking or unloading of the wire rope, in accordance with 29 CFR Part 1910.179. The load blocks shall be centered between the girders. The hook shall rotate freely with up to 131.25% rated load. The hoist capacity in pounds shall be clearly marked on both sides of the load blocks. The hook blocks shall be constructed so that the hooks and hook nuts can be removed without disassembly of the blocks. Prior to the load test, the Contractor shall remove the hook and nut and provide them to the Government for a non destructive test (NDT). The Government will NDT the entire load hook and nut. The NDT acceptance criterion is no linear indications greater than 1/16 of an inch, anywhere. The Contractor shall replace any hook and/or nut that do not meet this criterion as documented by the Government NDT report. The Contractor shall reinstall the hook and nut after satisfactory NDT testing by the Government.

2.3.6 Bumpers. Bumpers of the elastomeric, hydraulic or spring type shall be provided on the new trolley. The bumpers shall be designed such that the maximum deceleration rate for the trolley shall not exceed 4.88 meters/s^2 (16 feet/s^2) at 50% of the full load rated speed, power off (full load rated speed shall be used unless adequate information is supplied by owner to determine the actual attainable maximum speed). Additionally, the bumpers shall be capable of absorbing the total energy at 100% trolley full load rated speed (power off).

Trolley bumpers shall fully mate with the new end stops and mounted to provide proper clearance when bumpers are fully compressed. The design of bumpers shall include a mean of retaining the bumper in case of broken or loosened mounting connection.

Calculations shall verify trolley bumpers design. **(Submittal)**

2.3.7 Couplings. Couplings, excluding gear limit switch couplings, shall be steel. Chain type couplings shall not be permitted. Couplings between closely spaced bearings shall be of the full flexible type. Half-flexible type couplings shall be used for floating shafts and for shafts of lengths more than 16 shaft diameters between the coupling and the farthest bearing. Half-flexible couplings may be used on brake wheels. Rigid couplings may be used where the distance between the coupling and the farthest bearing is greater than 32 shaft diameters. Brake wheel couplings (if used) shall have the brake wheel mounted on the driven hub. For a built-up hoist assembly, barrel type couplings shall be used in connection between the hoist reducer output shaft and drum flange. There shall be adequate clearance between couplings and adjacent components to allow removal of the cover for inspection, adjustment and alignment. Flexible couplings shall not be relied upon to compensate for inaccurate alignment. Ends of coupled shafts shall be aligned within the recommended installation criteria of the coupling manufacturer. The Contractor shall submit a certification that each coupled pair of shafts was aligned using the coupling manufacturer's recommended procedures and shall provide a record of the actual measured misalignment for each coupling installation.

(Submittal)

2.3.8 Gearing. All gearing shall be of the enclosed (gear reducer) type, except final drive. Shafts with three or more bearing supports shall not be permitted. Gear reducers shall be standard commercial products. Enclosed reducers shall have a convenient means of lubricant level indication and draining (i.e. ball valve equipped drains). Hoist gearing shall be spur, helical, or herringbone type only. Open type drum gear-pinion sets (if applicable) shall consist of spur gears only. Trolley drive gearing may be spur, helical, herringbone or spiral bevel. Shaft mounted gear reducers may be used for trolley drive. The torque arms shall be other than threaded rod type and shall be designed and installed so that no eccentric loads are imposed on them. Enclosed gearing shall conform to ANSI/AGMA 6013, 6034, or 6035, or equivalent Japanese industrial standards as permitted. The drum gear (if applicable) shall be removable

from the drum. Enclose open gears with safety guard removable covers over openings for inspection and access for grease lubrication.

2.3.9 Anti-drip Protections. The new hoist/trolley shall be designed to preclude leakage of lubrications onto lifted loads, floor, or external grounds. Fit all equipments which can not be made leak-proof with suitable drip pans or shall have the foundations seal welded to create a dam. Drip pans shall be installed under all drive machinery. Drip pans shall be manufactured of steel and designed to permit easy removal of collected lubricant.

2.3.10 Design Factors. The hoist drive, except the wire rope, shall be designed to withstand the setting of the hoist brake under a full speed lowering condition with either no-load or rated load on the hook whichever load condition represents the worst case scenario. The trolley and hoist shall be designed to meet the requirements of ASME B30.2, ASME HST-4 and CMAA #70 or equivalent JCA design as permitted.

2.3.11 Alignment. All base-mounted motors, gear reducers, brakes, and pillow blocks shall be locked in proper alignment, both longitudinally and laterally, after adjustment, shimming, and fastening, with appropriately sized dowel pins or shear bars.

2.3.12 Threaded Fasteners. All base-mounted and flange-mounted components and all mechanical connections subjected to calculable loads shall be fastened with SAE J429, Grade 5 or Grade 8 fasteners, ASTM F436 washers, and SAE J995 Grade 5 or Grade 8 nuts or equivalent Japanese industrial standards. Mounting fasteners from flange-mounted components, including keeper bars, may be installed into tapped holes provided that adequate thread engagement is provided to develop the full tensile strength of the fastener. All nuts shall have a minimum of one thread pitch of the bolt protruding above the nut top surface. Fastener connections shall be sized neglecting any benefit to be derived from shear bars or dowel pins.

2.3.13 Sheaves. Sheaves shall be steel. The grooves shall be machined or ground to contour and rim toughened to not less than 320 BHN. The minimum pitch diameters of running sheaves shall be in accordance with Table 4.5.2-1 of CMAA #70. Sheave groove depth shall be not less than 1.15 times the hoisting rope diameter.

2.3.14 Trolley Drives. The trolley drives shall be A-4 type as specified in CMAA #70.

2.3.15 Shafts, Axles, and Pins. All shafts, axles, and pins shall be steel. The trolley axles shall be of the rotating type.

2.3.16 Trolley Wheels. The trolley travel wheels shall be double flanged and rolled-to-shape or roll-forged to provide properties in congruence with ASTM A504 or equivalent Japanese industrial standards. Wheels shall not be made from plate steel. Trolley wheels shall have straight treads. Wheels shall be rim toughened to not less than 320 BHN. Wheel sizing shall be in accordance with CMAA #70 recommendations.

2.3.17 Keys and Keyseats. Key / keyseat assemblies shall be of the parallel type and machined. The manner of key installation shall preclude any possibility of a key shifting out of its intended position.

2.3.18 Bearings. All bearings shall be of the antifriction type except where specifically permitted or required otherwise. Permanently lubricated sealed bearings shall be used wherever practical. All antifriction bearings shall be supplied with inner races except that

bearings without inner races are permitted as part of packaged hoist units. If a pedestal bearing is used to support the drum, the housing shall be steel.

2.3.19 Shims. All based mounted components shall have a minimum of 0.100 inches of shims under each foot. The number of shims of any thickness shall be limited to four (4) under any mounting bolt. Shoe brake bases shall be shimmed to align the brake shoes with the brake wheel. Shims shall be pre-cut, slotted, stainless steel, with the thickness stamped on an insert tab. The shape of the shims shall resemble a U and the slot widths shall approximate the mounting bolt diameters. The shim tabs shall be visible after installation.

2.3.20 Fits. All gears, pinions, couplings, brake drums, wire rope drums, wheels, other similar components shall be interference fitted to their respective shaft or axle. Interference fits shall conform to the force fit requirements prescribed in ANSI B4.1 and shall be medium drive fits unless length of engagement, material, or loading indicates otherwise. Alternatively, in bridge and trolley drives, keyless hub-to-shaft connections shall be permitted where minimum potential interface fits capable of transmitting maximum torque (not less than 200% rated motor torque) is provided. The individual component manufacturers shall endorse these interference fits. Bearings, bushings, and seals shall be fitted in accordance with the manufacturer's recommendations. Where multiple interference fitted components are installed on a single shaft from the same end, there shall be clearance between each component's bore and the portion of the shaft from the installation end up to its mounting location. Fits of components within standard commercial assemblies, such as gear reducers and electric motors, shall comply with the applicable industry standards or with the manufacturer's standard practice if industry standard criteria are not available.

2.4 ELECTRICAL REQUIREMENTS

2.4.1 The hoist/trolley shall be designed to operate on 440-volt, 3-phase plus equipment grounding conductor 60-hertz, AC, and capable of operating ancillary loads as well as the hoist, bridge, and trolley functions simultaneously with 100% rated load and 100% speed. Existing function motors are: hoist (2) 33 KW (44.25 HP), (2) trolley 2.2 KW (2.95 HP), (2) bridge 3.7 KW (4.96 HP). All control circuits shall be fed from a single phase, air cooled, double wound transformer. Enclosures for control panels and auxiliary devices shall be UL or CSA listed metallic NEMA type 12 as defined by NEMA Standards Publication Number 250. The enclosures shall be designed with appropriate heating and/or cooling accessories to maintain a climate within the panel that provides an appropriate internal temperature environment for proper operation of the drives. There shall not be any condensation inside the control panels. All electrical components shall be industrial grade and located so they are easily accessible for inspection and maintenance.

2.4.2 The contractor shall remove the existing 100 A runway electrification system and provide a new rigid runway electrification system for the crane with sufficient capacity for the existing bridge and new drives, including all necessary hardware to the crane from a wall or column mounted disconnect switch that will be installed in section 2.4.3 of this specification. The runway electrification system shall consist of three power conductors and an equipment grounding conductor that shall connect to a reliable building ground. The new electrification system shall be enclosed safety bar type. The ground runway conductor shall be colored green. Runway conductors shall be a minimum of 125 amps and sized for simultaneous motions of the bridge, trolley, and main hoist drive. The crane shall be grounded through the runway electrification system. As necessary, modify the existing electrical collector shoes to match the new runway conductors. Collectors shall be heavy duty sliding shoe type and shall be compatible with the

electrification system. The collector shoes shall be specifically designed to match the conductor contact surface. Collector arms shall be insulated, spring loaded and shall permit sufficient lateral and vertical movement to allow for imperfect track and for misalignment relative to the crane. Two collector shoes (tandem design) shall be provided for each conductor; each collector shoe shall be rated for its branch circuit current or higher so as to provide redundancy. Contractor shall submit a calculation showing amperage required for simultaneous motions of the bridge, trolley, and main hoist drive and the resulting conductor size chosen. **(Submittal)**

2.4.3 The contractor shall provide a disconnecting switch between the runway contact conductors and the power supply meeting all requirements of NEC 610.31 including:

Readily accessible and operable from the ground or floor level.

Capable of being locked in the open position.

Open all ungrounded conductors simultaneously.

2.4.4 The contractor is to provide a main line disconnect switch on the OET bridge prior to the main power supply box to allow electrical isolation of the crane for service. The mainline disconnect shall be a lever arm type switch (rotary type switches are not acceptable) located in a separate enclosure, such that when the disconnect is secured; there are no energized conductors in any control panels. The disconnect switch shall meet all NEC requirements.

All interconnecting wiring shall be copper stranded construction. All electrical components shall be UL rated or equivalent local standards. Motor branch circuit conductors shall be sized as to have an ampacity not less than 150% of the motor full load current rating and to be no smaller than 12 AWG. Conductor selections shall be selected and de-rated based on maximum ambient temperature. In determining the ampacity of continuous loads such as utility, heating, lighting, and air conditioning shall be multiplied by 2.25 in order to permit application of NEC 610-14 (a) for crane supply conductors.

Raceways shall be ferrous rigid metal conduit. Liquidtight flexible metal conduit may be used for run less than 1 meter when flexible connections are needed for motors and lighting. Excluding conduit directly connected to dynamic breaking resistors, raceways shall maintain a 12-inch clearance between the raceway and surfaces with temperatures exceeding 104°F. A separate grounding wire, sized in accordance with Section 250-122 of NEC, shall be routed with all ungrounded conductors. All wiring shall be numbered or tagged at all connection points. Power conductors which are shielded shall be labeled as to the conductor size. All unused conduit openings shall be plugged. All conductors shall terminate on terminal blocks; there shall be no splices, except for the following exceptions:

- a. Encoder conductors shall have a continuous run from the encoder to the drive. If signal transmission between a drive and encoder is longer than 50 meters, then fiber optic cable shall be used.
- b. Motor connections may be lugged and connected with nuts, bolts, flat washers and lock washers in lieu of terminal block in the motor connection box. No wire-nuts shall be permitted.

2.4.5 Bridge-to-trolley electrification shall be festooned type utilizing flat cables suspended from carriers riding on an I-beam or C-track. The conductors shall be selected so as to be of the longest length without splices. Conductors shall be fabricated from copper. A minimum of 20% of the festoon control circuit conductors for each electrification system shall be spares at the

time of crane acceptance. The trolley is required to be grounded through this conductor system. Festooned cable loops shall not extend below the high hook position. Lighting shall be added, mounted on the bridge walkway, aimed downward, on the floor. There shall be a minimum of (2) 500 W lights provided, illumination shall be approximately the same illumination as existing building fixtures, and shall be energized with crane power. Lighting fixtures shall be complete with lamps, shall be of rugged design and construction, and shall be of corrosion resistant materials. An on/off switch for crane lighting shall be located on the pendant controller.

2.4.6 Grounding and Bonding. Component grounding and bonding shall be IAW NEC 610.61.

2.4.7 Each hoist shall be equipped with upper and lower limit switches as well as a redundant block operated secondary upper limit switch to prevent contact between the hook and crane components (“two blocking”). When the primary upper limit is reached, the operator shall still be able to lower the block out of the upper limit switch. Lowering of the block shall automatically reset the primary limit switch. A lower limit switch shall be adjustable to set the extreme lower limits of hook travel. When the lower limit is reached, the operator shall still be able to raise the block. Raising of the block shall automatically reset the lower limit switch. The anti-two blocking limit shall be a gravity-set block-actuated switch. The block actuated switch shall remove all power from the affected hoist drive motor and brake independent of the hoist drive controller, utilizing a hoist line contactor, and set the brake when the secondary upper limit is reached. A spring-returned three position keyed bypass switch to bypass the hoist limits shall be provided on the outside of the control panel for each hoist. The far right position shall allow resetting of the secondary upper limit switch prior to resuming operation. During resetting of the secondary limit, the hoist shall operate in the lowering direction only. The far left position shall allow bypassing of the primary upper limit switch to allow the secondary limit switch to be tested on a periodic basis. The center position of the bypass switch shall be the NORMAL position with neither upper limit being bypassed. Hoist drives shall include slow down function that limits hoist speed to 25% when approaching upper and lower limit switches.

The primary upper limit switches shall be set at the maximum practical hook height but not lower than the existing hoists’ lifts. The secondary upper limit switches shall be set not lower than the hook block height of the primary upper limit switch plus the maximum run-out distance and not higher than the maximum run-out distance below the lowest contact point of the hoist or trolley structure (two-block condition). (The runout distance is defined as the hook block maximum drift after switch activation, in the hoisting direction at rated speed with no load on the hook.)

2.4.8 All controllers shall be properly selected, installed, and adjusted. Controllers for all motors shall be inverter type with smooth drive mechanism operating characteristics in hoisting and trolleying for the bridge crane. Static reversing, adjustable frequency controllers shall be provided for the trolley electric drive. Static reversing, adjustable frequency, speed regulated, closed loop flux vector controller with encoder feedback shall be provided for each hoist. Dynamic braking shall be provided for each electric drive. Hoist and trolley brakes shall set after the associated controller decelerates the drive motor to a controlled stop. Hoist and trolley controllers shall be sized to provide sufficient starting torque to initiate motion of that crane drive mechanism from standstill with 0 to 131.25% of rated load on the hook and not produce any rollback. The hoist controller shall enable the drive motor to develop full torque continuously at zero speed. All new motors must run smoothly, without torque pulsations at the lowest speed and be energized at a frequency not exceeding 60 HZ, but not less than 50 Hz, at the high speed.

Varistors for transient protection shall be provided internal to the controller.

Minimum harmonics protection shall consist of a reactor connected in series with each controller's line (input) terminals. All reactors shall be rated for continuous duty operation based upon motor nameplate amperes and shall be designed for 60 HZ operation.

For a drive motor branch circuit that exceeds 33 meters in length, a reactor shall also be connected in series with the controller load (output) terminals to provide standing wave protection.

2.4.9 The drive mechanism motors shall conform to NEMA MG 1. The hoist motors shall be AC vector duty, totally enclosed non ventilated (TENV) or totally enclosed fan cooled (TEFC), squirrel cage induction type with encoder. The trolley drive motors shall be AC inverter duty, totally enclosed non-ventilated (TENV) or totally enclosed fan cooled (TEFC), squirrel cage induction type. All motors shall have a 60 minute duty rating minimum. Motor insulation shall be a minimum of Class F, with a Class B temperature rise.

Motors shall be equipped with thermal trip type over-temperature protection. The temperature sensors shall be of the automatic resetting type and installed integral to the motor windings. Activation of any integral motor over-temperature device shall energize a red indicating FAULT light mounted on the crane and shall de-energize the individual function as follows:

Hoist: Hoisting direction only

Trolley: Travel motion in either direction.

The red indicating fault light shall remain energized until the over-temperature device resets.

2.4.10 Each drive mechanism's electro-mechanical brake(s) shall release upon movement of the electric drive's push button from the OFF position and verification of motor torque and shall set after the electric drive's controller is returned to the OFF position and motors have regeneratively slowed to a controlled stop. Hoist secondary brakes shall be controlled separate from the primary brakes and connected to a different output (within the drive or independent of the drive) from the primary brakes as specified in Appendix A.

2.4.11 Overload Protection. Each hoist shall be provided with a load-limit system consisting of a load-cell, load-sensing electronics, overload indicator lights, overload alarm bell and alarm cut-out switch. Each load cell shall be mounted to receive the load from equalizing sheave pin or upper block sheave pin. A load-limit system shall be capable of detecting and stopping hoist up operation during overload conditions at any speed shall be provided on each hoist motor circuit. Each load limit system shall have a keyed override, accessible during hoist testing, which can be deactivated during overload testing. The keyed override shall be located on the control panel. The contractor shall provide documentation from the overload limiting device manufacturer stating the tested tolerance for a range of settings from 80% to 125% of the rated hoist capacity. A final adjustment of overload protection shall be set at 95% of rated load. Provide an overload alarm light located on the crane to indicate a load greater than the preset maximum. Overload alarm shall be indicated with a red light and clearly labeled "OVERLOAD". Also provide a bell to indicate when an overload condition exists. Make provisions to turn off the bell from pendant station.

2.4.12 There shall be one main line contactor. Energization of the main line contactor shall be controlled by a POWER-OFF/POWER-ON pushbutton on the pushbutton station.

2.4.13 Proper over current protection for the control circuit, including control circuit transformer, shall be provided in accordance with the National Electric Code or relevant JIS. Motor branch circuits shall be individually protected by circuit breakers capable of being locked in the open position without use of a portable lockout device.

2.4.14 Pendant controls. Pendant controls shall have a means for securing crane power during normal work stoppage. "Power off" pushbutton must be wired to remove all power from the motors and brakes. Pendant control pushbuttons shall have two stages for each function operation, shall be spring returned to OFF position and shall be marked legibly (in KANJI) to indicate the motion it controls. The first stage shall be low speed. The second stage shall allow rated function speed to be achieved. Pendant controllers shall be supported from overhead by a small stainless steel wire rope or strain lead. Pendant weight shall not be supported by the pendant cable. The strain lead must be at least 3 mm diameter. A horn or bell, energized by a pushbutton on the pendant controller shall be provided.

2.4.14.1 Provide heavy-duty, dust-and-oil-tight type operating pushbuttons, and the following pendant control pushbuttons is for overhead bridge crane.

- (1) Main Hoist (Ue/Shita)
- (2) Aux. Hoist (Ue/Shita)
- (3) Trolley (Kita/Minami)
- (4) Bridge (Higashi/Nishi)
- (5) Power (Iri/Kiri)
- (6) Warning bell or horn switch
- (7) Lights (Iri/Kiri)

2.4.14.2 A black "POWER ON" push-button with a guard to prevent accidental actuation, a red mushroom head POWER OFF pushbutton and a key to allow locking the pendant in the OFF position shall be provided.

2.4.15 Provide the junction box at transition from horizontal to vertical for pendant cable, and ensure that festooning cables do not interfere with the hoist or building interferences after installation. The pendant shall move independent of the trolley and be capable of allowing operation from any point along the "span".

2.4.16 There shall be two 120 VAC duplex outlets complete with metal weather-proof enclosure and self-closing weatherproof receptacle cover provided on the crane. The outlets shall be located at the end of the bridge runway near the bridge motors. The circuit(s) supplying receptacles shall incorporate ground-fault circuit-interrupter protection for personnel and shall be protected by a circuit breaker with a minimum rating of 15 amps.

2.4.17 Identification. Electrical wires shall be marked at all connection points. All interconnecting wires shall be of stranded construction. All electrical connections shall be torqued. Torque the connections as specified by the manufacturer of the electrical component, or if the manufacturers torque specification is not available, to the torques specified in JIS C2805 Table 2. All connections in motor and control circuits shall be on terminal boards, or made with crimped lugs that are bolted/screwed together and insulated.

2.4.18 Hour Meter

Provide a non-resettable hour meter, connected across the main line contactor, readable from the exterior of the main control panel, to indicate the elapsed number of hours the crane is energized.

2.4.19 Indicator Lights

All indicator lights shall be located on the crane and be visible from the ground these include:

- (1) A white pilot light to indicate that power is available on the load side of the crane disconnect.
- (2) A blue pilot light to indicate crane is energized.
- (3) A red fault light as specified indicated in paragraph 2.4.9.
- (4) A red OVERLOAD light as specified in paragraph 2.4.11.

2.5 MISCELLANEOUS REQUIREMENTS

2.5.1 Capacity Signs. Two capacity plates shall be provided, one for each side of the crane. Each plate shall be lettered to indicate the rated capacity of the bridge and the rated hoisting capacity of the hoist in pounds. The capacity plates shall be of sheet metal with black epoxy paint lettering on a white epoxy paint background. All lettering shall be of sufficient size to be easily read from the floor. Capacity plates shall be securely attached to the crane.

2.5.2 Bridge/Trolley Direction Labeling. The bridge and trolley travel directions shall be labeled as N/S/E/W (marked legibly in KANJI). These directions shall be labeled on the end trucks and bridge girder, or the hoist bottom so they are visible from the floor. The pendant pushbuttons shall have corresponding directional labels.

3 TEST, INSPECTION AND ACCEPTANCE

3.1 General Testing Requirements. Each prescribed test and inspection shall be fully documented in a report describing data recorded, conditions observed, acceptability, dates, and personnel involved. All testing shall be performed in the presence of Government representatives. The Contractor shall advise the Government of the anticipated test dates not less than seven working days prior to the beginning of the test.

3.1.1 Existing Conditions. Prior to installation, the existing crane and building shall be inspected by the crane contractor and a representative appointed by the Contracting Officer to document the condition of all existing construction and record any existing damage, and verify operating clearances. Upon completion of the work, the crane contractor and the appointed representative shall again inspect the building to determine the extent of any damage that may have occurred as a result of work performed under this contract. Any damage to either the building and/or its contents as a result of the crane installation and/or testing shall be the responsibility of the crane contractor under this contract.

3.2 Shop Testing. The Contractor at his own facility prior to shipment shall test each operating part or major component of the assembled new hoists/trolley at a minimum of "No Load". Items tested and/or inspected shall include brakes (operation and adjustment), interlocks, lights, motor controls, speeds, limit switches, wiring, and paint.

3.3 Field Testing. After the new hoists/trolley is installed, the Contractor shall perform inspection, and then perform no load, endurance and load tests in accordance with Appendix B.

3.3.1 Prior to lifting weights for the first time, the Contractor shall allow the Government to perform a safety inspection of the crane. The Contractor shall assist the Government by operating the crane as needed.

3.3.2 Government shall provide certified test weights and rigging gear for crane testing. The contractor shall provide all personnel and equipment necessary to conduct the tests, including but not limited to crane operators, riggers, personnel to supervise the test and record results, and calibrated test equipment. A government representative shall be on site during testing to verify data recorded and verify testing performed. The test weight marked shall be the actual weight taken from the scale or other measurement device. Solid weights shall be measured using calibrated equipment traceable to the National Institute of Standards and Technology, with a minimum accuracy of $\pm 2\%$. Test areas must be roped off or otherwise secured to prevent entry of unauthorized personnel and equipment.

3.4 Final Government Inspection. After satisfactory Contractor field-testing, the Government shall have 15 working days to operate and inspect the crane for contract compliance. The Government shall provide the Contractor with a punch list of deficient items for correction. The Contractor shall correct all noncompliant items, at Contractor expense, prior to acceptance.

3.5 Acceptance. The Government acceptance location of the crane will be in Building 480 at the SRF-JRMC Detachment Sasebo, Japan, after satisfactory results from the tests and inspections and after receipt of all certifications and technical documentation.

4 TECHNICAL DOCUMENTATION

4.1 General Requirements. The Contractor shall submit to the Government Representative all items of technical documentation listed hereinafter. The Contractor shall ensure that all submittals are entirely legible, translated in English and Japanese, and fully comply with the contract requirements. The content and time of submission shall be as specified below. Submit three (3) copies of all submittals unless otherwise noted. The Government shall have 2 weeks minimum to review all submittals prior to the contractor starting work.

4.2 Design Submittals – SUBMIT PRIOR TO FABRICATION

4.2.1 CALCULATIONS. The following industry standard sizing calculations shall be provided for review. All variables shall be listed and defined at the beginning of each calculation section; variables shall be in accordance with required references. Calculations shall include all relevant loads, stresses, allowable and resulting factors of safety based on the existing loading data.

a) CMAA 70 load cases 1 and 2 or JIS B 8821 calculation standards for steels structures of cranes. In addition to load cases 1 and 2 of CMAA No. 70, the following additional load combination shall also be considered:

Test Loads - The modified crane will be periodically tested up to 131.25% of the modified capacity. Combined stresses for the following load combinations shall be calculated to ensure structural adequacy during testing:

Case 3: Test Loads (Stress Level 3)

$DL (DLF_B) + TL (DLF_T) + LL (1 + HLF) + IFD + SK$

Notes: (1) $LL = 1.3125 \times \text{rated capacity}$.

(2) Test and extraordinary loads shall not be considered in the fatigue analysis.

(3) Formula abbreviations correspond to principal loads as defined in CMAA #70 Section 3.3.

(4) The subscripts "T" and "B" refer to trolley and bridge, respectively.

- b) Wire rope calculations indicating $FS > 5$ between rated load line pull and nominal wire rope strength
- c) CMAA 70 motor and brake sizing calculations or JIS C9620
- d) Trolley endstops
- e) Dead weight delineating hoist/trolley, end trucks, and total crane weight
- f) Bridge maximum wheel loads (without impact)
- g) Runway electrification system and disconnect sizing
- h) Overcurrent protection
- i) Trolley frame analysis including hoist support beam deflection as applicable.
- j) Design/selection compliance to components applicable to section 2.3.10.

4.2.2 DRAWINGS.

4.2.2.1 General Arrangement Drawings. These drawings shall demonstrate compliance with the contract specification. The complete crane rail system shall be shown in plan view. In addition, the crane shall be shown in side and end elevation views. All major features of the crane shall be shown, including:

- a) clearances from operating envelope
- b) dead weights of each new or replaced crane component and location of centers of gravity for each
- c) speeds (trolley and hoist)
- d) capacity
- e) electrical power supply requirements.
- f) bridge and trolley wheel loads (without impact).
- g) hoist/trolley make and model
- h) trolley electrification detail
- i) pendant detail
- j) hook coverage map

4.2.2.2 Bridge (Runway) Electrification Layout. Provide a layout of the replacement runway conductor/collector system. The layout shall show the position of support brackets including fastening details, all components of the electrification system, and appropriate dimensions.

4.2.2.3 Electrical Drawings. These drawings shall include complete schematic diagrams for the crane. Complete assembly (wiring) diagrams including a comprehensive component material list showing all electrical components used on the crane. These drawings shall show the layout of electrical equipment on the crane, including control panel enclosures, motors, brakes, limit switches, conduits, and conductor systems.

4.2.3 CATALOG CUTS. Catalog cuts shall be marked-up or supplemented with additional sheets to clearly identify the model or size and selected options, features, or modifications to demonstrate compliance with specification requirements. Catalog cuts, which show any modifications beyond the standard options and all supplemental pages, shall bear original signatures and dates of the equipment manufacturer's authorized representative. Each catalog cut and each supplemental sheet shall clearly identify the drive to which it applies. The contractor shall submit catalog cuts for the following items.

- a) hoist/trolley (including details on any gear reducers, brakes, couplings, limit switches, motors, hook blocks, hooks, wire rope, bumpers, etc.)
- b) hoist drive's motor control equipment
- c) trolley drive's motor control equipment
- d) runway electrification
- e) electrical cable festoon system (trolley)
- f) pendant control, pendant cable
- g) motors
- h) variable frequency drives

4.2.4 INSTALLATION PLAN. The Contractor shall submit a plan detailing the logistics involved in unloading at the laydown area and erection of the new hoist/trolley. The plan shall include the type of equipment necessary for the unloading at the laydown area, storage and protection of the new hoist/trolley at the laydown area, transportation to the erection site, coordination of work effort, equipment, and materials required for testing and explanation of new hoist/trolley erection and testing.

4.3 Project Documentation Submittals – SUBMIT PRIOR TO FIELD TESTING (unless specified elsewhere in this document)

4.3.1 CERTIFICATIONS. All certifications shall be dated and shall bear the original signature (above the printed name) of the authorized representative of the Contractor or the manufacturer of the items or equipment being certified. Each certification shall clearly identify the drive, component, or location (as applicable) to which it applies.

4.3.2 TECHNICAL MANUAL. The contractor shall provide a technical manual for the crane containing at a minimum the following items. The technical manual shall be supplied in paper and electronic format. The technical manual will not be limited to the hoist/trolley alone, but shall include all the equipment furnished under this contract.

- a) assembly, installation, alignment, and programming instructions
- b) preventative maintenance, including periodicity
- c) equipment function, normal operating instructions and characteristics, and special precautions/limiting conditions for starting and stopping, operation, and safety
- d) guide to troubleshooting
- e) lubrication instructions including location of lubrication points, type of lubricant to be used, and the frequency of lubrication
- f) catalog cuts for all components (see Design Submittal requirements)

g) parts lists including enough detail to support ordering replacement parts from general industry and a recommended spare parts list

h) as-built drawings in 11" x 17" format.

i) Control System Parameter Record. After the crane has passed the final field test, the contractor shall complete a control system parameter record for the crane and provide the crane parameter file downloaded from the crane at time of acceptance. The record shall include the contract number, contractor's name and address, date, all control system parameters and their final settings. Each control system parameter shall be designated as either used or unused.

4.3.3 INSPECTION, ENDURANCE TESTING AND NO LOAD/LOAD TEST REPORTS

4.3.3.1 Inspection Reports. The contractor shall submit a maintenance inspection report to document the inspections required by Appendix B. A preliminary copy shall be submitted for review prior to the inspection and a completed copy shall be submitted with the inspection results.

4.3.3.2 No load/Load Test Procedures/Report. The contractor shall develop and submit a proposed no load/load test procedure including all contractual and OSHA required testing that will demonstrate operation, capacity, safety etc. of the crane. As a minimum, the test procedure shall conform to the requirements of Appendix B. The test procedure shall be submitted and approved prior to beginning any testing. Upon successful completion of all testing, the contractor shall submit a completed record of test results and data.

4.4 As-Built Submittals – SUBMIT AFTER COMPLETION OF FINAL PUNCHLIST

4.4.1 AS-BUILT DRAWINGS. The purpose of the "as-built" drawing classification is to identify the last approved version, which the crane design/construction has undergone at the time of its acceptance by the Government. Each drawing shall list the latest revision - in alphabetical order- followed by the "as-built" entry in the revision block.

4.4.2 DRAWINGS ON CD-ROM. The Contractor shall provide all final "as built" contract drawings on CD-ROM disk(s). The format of the drawing files shall be in AutoCAD. Files shall have "DWG" extensions in version 2002 or newer or DXF format.

5 ADMINISTRATIVE REQUIREMENTS

5.1 Christmas Shutdown. In addition to the above listed holidays, SRF-JRMC Yokosuka is normally closed for all except emergency services during the week between Christmas and New Year's Day. Any onsite work during this time must be specifically requested by the Contractor and approved by the Government Representative as stated above.

5.2 Legal/Regulatory Compliance. The Contractor is responsible for obtaining all appointments, licenses, and permits required for the prosecution of the work. The Government Representative may request evidence of such permits and licenses at any time during contract performance.

5.3 Safety Plan. The Contractor shall be required to submit a formal Safety Plan within fifteen (15) working days following contract award. The Safety Plan must comply with all of the applicable standards contained in 29 CFR, Parts 1910, 1915, and 1926. The Safety Plan must

be designed to assure that the cranes, personnel, equipment, building, Government property and adjacent waters will be safeguarded against injury or damage throughout the crane removal and installation process. The plan will address worker fall protection. **(Submittal)**

5.4 Energy Conservation. The Contractor shall comply with the base energy conservation program. Use of high energy consuming tools or equipment requires prior approval by the Government Representative.

5.5 Design Review Meeting. The contractor shall, prior to commencing fabrication, meet in a Design Review meeting with the Government Representative and other Government personnel to discuss the design and any comment resolutions. Prior to the design review meeting, the contractor shall have submitted required drawings and calculations a minimum of one month earlier for Government review. The contractor shall notify the Government 30 days prior to scheduling of the Design Review Meeting.

AVTRON ADVANTAGE-32 ホイストドライブのマイクロプロセッサの故障

参照: A/MSG/NAVCRANECEN LESTER PA/061700Z/JUN03

1. 本安全広報の目的は、マイクロプロセッサで制御されるクレーンの安全装置に関する詳しい情報と指示を提供することである。マイクロプロセッサで制御されるクレーンには、周波数可変装置、フラックスベクトル装置、インバータ装置、デジタル DC 装置、シリコン制御型整流装置(SCR'S)や絶縁型バイポーラトランジスタ(IGBT'S)の点弧を制御するマイクロプロセッサを使用する装置等が含まれる。
2. 背景：参照Aは、AVTRON ADVANTAGE-32 ホイスト制御ホイストドライブにおいて、つり荷の制御不良があったことを海軍のあるゆる部隊に警告し、NCC の同意の下に部隊の技術部門がドライブ/コントロールの適切な予防対策が決定するまで上記のホイストドライブが備わるクレーンの使用を中止するよう指示していた。これまでに、各部隊は NCC の同意の下、その他の製造メーカーのマイクロプロセッサ制御ホイストドライブについてもマイクロプロセッサ制御盤が故障した場合に、つり荷の制御不良を防止する適切な予防対策の実施を決定するよう指示を受けていた。
3. 定義：
 - A. 閉ループシステムとは、回転計発電機（タコジェネレーター）エンコーダレゾルバー等によってモータの軸回転速度が駆動制御部に帰還するシステムである。
 - B. 開ループシステムとは、回転計発電機（タコジェネレーター）エンコーダレゾルバー等によってモータの軸回転速度が駆動制御部に帰還しないシステムである。
 - C. トルクプルービングとは、ブレーキが開放される前に、つり荷を宙ぶりのまま保持するために必要な十分なモーター制動トルクを確保するドライブである。
4. 指示：マイクロプロセッサで制御されるクレーンと NAVFAC P-307 第 14 節に記されるクレーンとホイストすべてについて、各部隊は NCC の同意の下、マイコン駆動制御部の一内部部品が不良になった場合に、つり荷の制御不良を防止する適切な予防対策を決定するよう指示を受けた。部隊の決定事項および NCC の同意内容を文書化し、該当クレーンの機器経歴ファイルに機器が廃却されるまで保存しておくこと。
5. ドライブ/コントロールの適切な最低予防対策を以下に記す：
 - A. モータとブレーキからの電源をすべて遮断するための「非常停止」または「電源切り」ボタンが備わっていること。
 - B. ホイストドライブモーターとブレーキからの電源をすべて遮断するための最終上限リミットスイッチ回路がマイクロプロセッサドライブから独立して備わっていること。
 - C. 開ループシステムは、動力伝達装置のメカニカルロードブレーキを利用しなければならない。
 - D. 閉ループシステムは、モーター制動トルクを供給できなければならない。
6. 閉ループシステムは、以下の機能のうちの一つを備えている事：
 - A. ホイストブレーキを 1 台備えるクレーンの場合、ブレーキを開放するために、それぞれのブレーキ接触器を励磁する 2 つの独立した出力回路が必要である（接触子がブレーキコイルと直列になっているもの）。もしくは、そのドライブから独立した追加のブレーキ接触器で、その接触子がドライブが制御するブレーキ接触器と直列になったもの。

- B. ホイストブレーキが2台備わるクレーンの場合、2次ブレーキは、1次ブレーキとは別の出力（ドライブ内または独立したドライブ）に接続されていること。
 - C. 1次ブレーキ以外にメカニカルロードブレーキを備える事。
7. 以下の追加安全装置を検討しなければならない。
- A. そのドライブから独立した複数の運転ができる1次ブレーキ。（例えば、マスタースイッチ/ペンダントステーションまたは「デッドマン」スイッチを通じて励磁される独立したブレーキ接触器に基づいたブレーキ操作（それらのブレーキ接触子はドライブで制御されるブレーキ接触器と直列に配線されていなければならない。）
 - B. 1次ブレーキとは別の駆動出力に接続されている2次ブレーキ。
 - C. 2次ブレーキで、その運転がドライブから独立したもの。（例えば、マスタースイッチ/ペンダントステーションまたは「デッドマン」スイッチを通じて励磁される独立したブレーキ接触子によってブレーキが作動する）
 - D. ドライブプロセッサを監視する独立した監視装置で、ブレーキを掛けたり、ドライブを停止することができるもの。
 - E. ドライブから独立した制御システム（プログラム可能な論理制御器またはコンピューターなど）で、このドライブの入力と出力を監視し、ブレーキを掛けたり、ドライブを停止することができるもの。
8. 本 CSA が参照 A にて要求される対策完了日に代わり優先される。前述の paragraph 4 が要求する審査が本 CSA 発行日から 120 日以内に完了していること。クレーンに前述の paragraph 5 および 6 に記述する適切な安全装置を持たないものは、次回の年次 PM（またはタイプ B）までに変更されていなければならない。前述の paragraph 5 および 6 の要件に関する例外や免除事項がクレーン改造申請書に記載されてあること。
9. 運転士は、制御されていない動きなどを察知したらいつでも「緊急停止」または「電源遮断」スイッチを投入すること。次に、クレーンの技術的な評価および/またはクレーン検査の通知を直ちに受けること。さらに NAVFAC P-307 の 10.13 項のつり荷の最初の巻き上げに指示されている通り、玉掛け員はつり荷が完全に宙づりになった時点で運転士に巻き上げ停止の合図を送り、つり荷が適切に安定しブレーキが適切に作動することを確認する。
10. 本 CSA は、REVMONT、CRAFT、SAMSUNG 60-ton ポータルクレーン、NAVSHIPYARD NORFOLK 165-ton スチフレグデリック、SAMSUNG 151-ton ポータルクレーンまたは NAVSHIPYD PUGET SOUND の管理された工場内にある橋型クレーンには適用されない。NCC および各部隊の技術担当部門は、上記のクレーンをこれまでに審査した。これらのクレーンは、本 CSA の paragraph 5 および 6 を満たし、paragraph 7 および 11 に記述する追加安全装置類が最低一つ備わっている。
11. すべての新しいクレーンと NAVFAC P-307 第 14 節のホイストとクレーンはすべて、本 CSA の要件満たさなければならない。

RATUZYUW RULSBMR0284 1571700-UUUU--RUAYAAG RUAYAAJ RUAYABJ RUYNAAW
RUYNABW RUYNJSG RUYNAAC RUYNCFA.
ZNR UUUUU ZUI RUCOMCB1299 1571841
R 061700Z JUN 03 ZYB PSN 760971Y30
FM NAVCRANECEN LESTER PA//09//
TO AIG ZERO ZERO ONE FIVE FOUR
BT
UNCLAS //11262//
MSGID/GENADMIN/NAVCRANECEN LESTER PA//

SUBJ/CRANE SAFETY ADVISORY (CSA) 121, MICROPROCESSOR FAILURE ON /AVTRON
ADVANTAGE-32 HOIST DRIVES// REF/A/MSG/NAVCRANECEN LESTER
PA/161602ZSEP2002// AMPN/REF A IS CRANE SAFETY ADVISORY 110, UNCONTROLLED
LOWERING OF WHIP HOIST.// POC/ANGELO HORIATES/GS/NAVY CRANE
CENTER/LOC:LESTER PA
/TEL:610-595-0505/TEL:DSN: 443-0505/TEL:FAX: 610-595-0748
/EMAIL:HORIATESAG@NCC.NAVFAC.NAVY.MIL//

RMKS/1. The purpose of this CSA is to alert navy activities of a catastrophic failure on an AVTRON advantage-32 hoist drive. A private shipyard reported that a KONE crane utilizing the subject drive for its auxiliary hoist failed causing a load to free fall approximately 18 inches to the ground. The operator lifted the load and intended to stop to verify the load was balanced. When the page 02 RULSBMR0284 UNCLAS //11262// hoist controller was returned to neutral, the load lowered to the ground. The cause of the drive failure has been identified as a failed chip on a microprocessor circuit board. This failure allowed the aux hoist brake to remain open even though the controller was in the neutral position.

2. Activities are directed to determine if any of their cranes utilize AVTRON advantage-32 drives. If these drives are utilized in hoists, activities are directed to remove these cranes from service until the local engineering organization has determined, with concurrence by Navy Crane Center, that appropriate drive/control safeguards are in place to prevent loss of load control if the microprocessor board fails.

3. For all other manufacturers' microprocessor controlled hoist drives, activities are directed to determined within 120 days, with concurrence by navy crane center, that appropriate drive/control safeguards are in place to prevent loss of load control if a microprocessor board fails. This CSA does not apply to REVmont, craft, or Samsung 60 ton portal cranes, the Samsung 151 ton portal crane, Navshipyd Norfolk 165 ton stiff leg derrick, or to Navshipyd Puget sound bridge cranes in the controlled industrial facility. PAGE 03 RULSBMR0284 UNCLAS //11262//
These cranes have appropriate safeguards.

4. As noted in ref a, whenever the operator senses a loss of control, he/she should engage the "emergency stop" or "power off" switch. Crane engineering and/or crane inspection should be immediately notified. In addition, as specified in NAVFAC P-307 paragraph 10.13, upon initial hoisting of the load, the rigger shall signal the operator to stop hoisting when the load becomes completely suspended (i.e., lifted just enough to clear the ground) to ensure the load is properly balanced and the brake is functioning properly.//

BT
#0001

R 140845Z OCT 03 NavyCraneCenter
FM NAVCRANECEN LESTER PA//09//
TO AIG ZERO ZERO ONE FIVE FOUR
MSGID/GENADMIN/NAVCRANECEN LESTER PA//
SUBJ/CRANE SAFETY ADVISORY (CSA) 121A, MICROPROCESSOR FAILURE ON/AVTRON
ADVANTAGE 32 HOIST DRIVES//
REF/A/MSG/NAVCRANECEN LESTER PA/061700Z/JUN03//AMPN/-//
POC/ANGELO HORIATES/GS/NAVCRANECEN/LOC:LESTER PA/
TEL:610-595-0505 EXT 125/TEL:DSN: 443-0505/TEL:FAX: 610-595-0748
EMAIL:horiatesag@ncc.navfac.navy.mil//

RMKS/1. The purpose of this CSA is to provide additional information and direction regarding required safety features on microprocessor controlled cranes. Microprocessor controlled cranes include adjustable frequency drives, flux-vector drives, inverter drives, digital dc drives, and any other drives utilizing a microprocessor that controls the firing of silicon controlled rectifiers (SCR's) or insulated gate bipolar transistors (IGBT's).

2. BACKGROUND: REF A alerted navy activities of a loss of load control failure on an AVTRON advantage-32 hoist drive and directed activities to remove cranes equipped with these hoist drives from service until the local engineering organization, with concurrence by navy crane center (NCC), could determine that appropriate drive/control safeguards are in place. Additionally, for all other manufacturers' microprocessor controlled hoist drives, activities were directed to determine, with concurrence by NCC, that appropriate drive/control safeguards were in place to prevent loss of load control should a microprocessor board fail.

3. DEFINITIONS:

A. Closed-loop system is a drive system where there is motor shaft speed feedback to the drive controller by a tachometer-generator, encoder, or resolver.

B. Open-loop system is a drive system where there is no motor shaft speed feedback to the drive controller.

C. Torque proving is a drive feature that ensures adequate motor torque is available to suspend the load before brakes are released.

4. DIRECTION: for all microprocessor controlled hoist drives, including NAVFAC P-307 Section 14 hoists and cranes, activities are directed to determine, with concurrence by NCC, that appropriate drive/control safeguards are in place to prevent loss of load control should an internal component in a microprocessor drive fail. This determination and NCC concurrence shall be documented and permanently placed in the crane's equipment history file. Previous determinations shall be reaccomplished as a result of updated requirements.

5. Appropriate minimum drive/control safeguards are identified below:

A. "emergency stop" or "power off" pushbuttons must be wired to remove all power from the motors and brakes.

B. Final upper limit switch circuitry must be wired to remove all power from the hoist drive motor and brake(s) independent of the microprocessor drive.

C. Open-loop systems must utilize a mechanical load brake in the drivetrain.

D. Closed-loop systems must provide torque proving.

6. For closed-loop systems, one of the following features is also required:

A. For cranes with one hoist brake, two independent drive outputs energizing separate brake contactors, whose contacts are in series with the brake coil, are required to release the brake; or an additional separate brake contactor independent of the drive whose contact is in series with the drive controlled brake contactor.

B. For cranes with two hoist brakes, the secondary brake shall be connected to a different output (within the drive or independent of the drive) from the primary brake.

C. A mechanical load brake in addition to the primary brake.

7. The following additional safety features should be considered:

A. A primary brake that has redundant operation independent of the drive (e.g., a brake operation based upon a separate brake contactor energized through the master switch/pendant station or "Deadman" contacts whose contact is in series with the drive controlled brake contactor).

B. A secondary brake connected to a different drive output from the primary brake.

C. A secondary brake whose operation is independent of the drive (e.g., a brake operation based upon a separate brake contactor energized through the master switch/pendant station or "Deadman" contacts).

D. An independent watchdog system monitoring the drive processor that has the capability to apply the brakes and shut down the drive.

E. A supervisory control system (such as a programmable logic controller or computer), independent of the drive, that monitors the inputs and outputs of the drive and has the capability to apply the brakes and shut down the drive.

8. The action completion dates required by ref a are superseded by this CSA. The review required by paragraph 4 shall be completed within 120 days of the issue date of this CSA. Cranes that are not equipped with adequate safety features as described in paragraphs 5 and 6, must be reconfigured by the next annual (or type "B") pm after the review. Exceptions or waivers to the requirements of paragraphs 5 and 6 shall be addressed on crane alteration requests.

9. As noted previously, whenever the operator senses a loss of control, he/she should engage the "emergency stop" or "power off" switch. Crane engineering and/or crane inspection should be immediately notified. In addition, as specified in NAVFAC P-307, Paragraph 10.13, upon initial hoisting of the load, the rigger shall signal the operator to stop hoisting when the load becomes completely suspended (i.e., lifted just enough to clear the ground) to ensure the load is properly balanced and the brake(s) is functioning properly.

10. This CSA does not apply to Westmont, Craft, or Samsung 60-ton portal cranes, Navshipyd Norfolk 165-ton stiff leg derrick and Samsung 151-ton portal crane, or Navshipyd Puget sound bridge cranes in the controlled industrial facility. NCC and the local activity engineering

organizations have evaluated these cranes. These cranes meet paragraphs 5 and 6 of this CSA and are equipped with at least one of the additional safety features described in paragraph 7.

11. All new cranes including NAVFAC P-307 Section 14 hoists and cranes shall meet the requirements of this CSA