



DEPARTMENT OF THE NAVY  
OFFICER IN CHARGE OF CONSTRUCTION  
PACIFIC DIVISION, NAVAL FACILITIES ENGINEERING  
COMMAND DETACHMENT, FAR EAST  
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8 Sep 94

MEMORANDUM: OICC FE 36-3 (Revision 14)

From: OICC Far East

Subj: REQUIRED DOCUMENTS FOR ARCHITECT-ENGINEER CONTRACTS

Ref: (a) MEMORANDUM OICC FE 36-3 (Rev 13) of 6 Jun 94

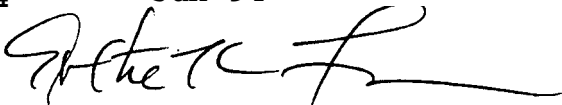
Encl: (1) OICC FE A-E Guide P-74 of Jun 94

1. Enclosure (1) is forwarded as revision 14 to reference (a). Cancel reference (a).
2. The following is a list of current documents under this memo.

<u>Subject</u>	<u>Implementing Document</u>
a. SOP (36-3): Life Cycle for Architect Engineer (A-E) Contracts from Synopsis to close-out	27 Mar 92
b. Contract Clauses (Architect Engineer Fixed Price Contract)	Mar 1992
c. Representations and Certifications (A-E/ES Contract)	Mar 1992
d. Policy Changes Relating to Architect-Engineer Contracts and Checks and Balances in the	COMNAVFACENGCOM ltr 4290.3 Ser 021B/92-529 of 13 Jul 92
e. Redistribution Indefinite Quantity A-E Desk Guide	COMNAVFACENGCOM ltr 5100 Ser 021A/92-021-37 of 25 Ser 92
f. Minimum Consideration in A/E Indefinite Quantity Contracts (102-92)	COMNAVFACENGCOM ltr 4011 Ser 021A/92-021-122 of 15 Dee 92
g. Policy Change for use of Single Board for Selection of A/E Contracts	COMNAVFACENGCOM ltr 4236 Ser 021B/93-021-11 of 22 Jan 93
h. Distribution of Construction Contracts and Modifications to the Design Firm of Record	COMNAVFACENGCOM ltr 4287 Ser 021B/92-021-126 of 22 Jan 93
i. SOP (36-4): Government Estimates for A-E Contracts	11 Feb 93

Subj: REQUIRED DOCUMENTS FOR ARCHITECT-ENGINEER CONTRACTS

- j. Architect-Engineer Liability Reporting and Feedback COMNAVFACENGCOM ltr 4334.3 022/AELFDB of 10 Mar 93
- k. Distribution of Construction Contracts and Modifications to the Design Firm of Record (104-92) COMNAVFACENGCOM ltr 4287 Ser 021B/92-021-126 of 22 Jan 93
- l. Short Selection Processes for A-E Contracts Not To Exceed The Small Purchase Limitation COMNAVFACENGCOM ltr 4290 Ser 021B/93-021-36 6 Apr 93
- m. SOP (36-3): Life Cycle of A-E Contracts From Synopsis to Closeout 16 Apr 93
- n. Selection Criteria for Architect-Engineer Contracts COMNAVFACENGCOM 4320 021B/93-021-58 of 23 Apr 93
- o. DD Form 1421, Performance Evaluation (Architect-Engineer), Use of For Comprehensive Long-Term Environmental Action, Navy (Clean) Contracts COMNAVFACENGCOM 4335.20 022/EVALCL of 18 Jun 93
- p. NAVFACENGCOM A-E Contracts Conference COMNAVFACENGCOM 4287 Ser 021B/93-021-119 of 18 Jun 93
- r. Remediation Contract Work Breakdown Cost Estimates Prepared Via Architect-Engineer Contracts (28-93) COMNAVFACENGCOM 4320 Ser 021B/93-021-108 of 18 Jun 93
- s. Environmental Architect-Engineer Contracts PACNAVFACENGCOM 4330 02B/94-015 of 28 Jan 94
- t. Architect-Engineer Liability Reporting and Feedback PACNAVFACENGCOM 4330 02B/94-032 of 23 Mar 94
- u. Improper Use of Brooks Act Procedures to Procure Interior Design Services PACNAVFACENGCOM 4330 02B/94-053 of 5 May 94
- v. OICC Far East, A-E Guide P-74 Jun 94



E. K. FONOIMOANA  
By direction

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RECORD OF REVISIONS

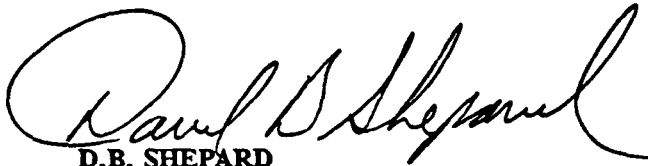
REV NO.	DATE OF REVISION	DESCRIPTION	DATE ENTERED	SIGNATURE

## FOREWORD

This publication provides guidance to Architect-Engineer (A-E) firms performing services for the Department of the Navy, Officer in Charge of Construction, Pacific Division, Naval Facilities Engineering Command Detachment, Far East (OICC Far East). It is essential that all A-E personnel and associates responsible for the preparation of plans, specifications, cost estimates, studies and other services carefully study this Guide and follow the procedures and instructions contained herein.

The work of the A-E will be reviewed by the OICC Far East only to the extent necessary: 1) to establish conformance with authorized scope and applicable Department of the Navy design criteria, and 2) to establish a reasonable assurance that the work can be completed within the funds authorized. The A-E shall assume full responsibility for the technical accuracy and professional quality of all work and material which are submitted in fulfillment of contract requirements with OICC Far East.

REVIEWED AND APPROVED, JUNE 1994

A handwritten signature in black ink, appearing to read "D.B. Shepard". The signature is written in a cursive, flowing style with a large initial "D" and "S".

**D.B. SHEPARD**

Captain, CEC, USN

Officer in Charge of Construction

Pacific Division, Naval Facilities Engineering Command Detachment, Far East

**T A B L E O F C O N T E N T S P A G E**

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## **SECTION 1. GENERAL INFORMATION**

### **1.1 PURPOSE**

This publication provides information regarding the policies, procedures and instructions applicable to Architect-Engineer (A-E) contracts awarded by the Department of the Navy, Officer in Charge of Construction, Pacific Division, Naval Facilities Engineering Command Detachment, Far East (OICC Far East).

### **1.2 BACKGROUND INFORMATION**

Each year, the Commander, Naval Facilities Engineering Command (COMNAVFACENGCOM) is given the responsibility to design numerous construction projects for the Navy, Marine Corps and the Air Force. A certain amount of the design effort is done by in-house personnel. But when the volume of design work cannot be readily undertaken by in-house personnel or when the projects involve special technical requirements beyond the capability of in-house personnel, the Navy employs A-E firms. In fact, most of the design of Naval facilities is accomplished by A-Es under contract to the Command.

The Brooks Act (Public Law 92-582 enacted on Oct. 27, 1972) promulgated Federal Government policy regarding the procurement of A-E services. The Law defines A-E services and stipulates the manner in which these services are to be procured. Specifically, the Law indicates that A-E services are to be obtained from the best or highest qualified firm through negotiated contracts at a cost which is fair and reasonable to the Government.

### **1.3 DEFINITIONS**

Abbreviations used herein and in the "Statement of Architect-Engineer Services" will include the following.

**Architect-Engineer (A-E).** An Architect, Engineer or a firm engaged by the OICC Far East for professional architectural or engineering services. An A-E contract awarded by the OICC Far East will normally be for design work but may also include (or be exclusively for) engineering services (ES) as defined below.

**A-E Firm.** Any individual, firm, partnership, corporation, association or other legal entity permitted by law to practice the professions of architecture or engineering.

#### **Architectural and Engineering Services.**

- (1) Professional services of an architectural or engineering nature, as defined by State law, if applicable, which are required to be performed or approved by a person licensed, registered or certified to provide such services as described herein;

- (2) Professional services of an architectural or engineering nature performed by contract that are associated with research, planning, development, design, construction, alteration or repair of real property; and
- (3) Such other professional services of an architectural or engineering nature, or incidental services, which members of the architectural and engineering professions (and individuals in their employ) may logically or justifiably perform, including studies, investigations, surveying or mapping, tests, evaluations, consultations, comprehensive planning, program management, conceptual designs, plans and specifications, value engineering, construction phase services, soils engineering, drawing reviews, preparation of operating and maintenance manuals, and other related services.

**Design.** As related to the 6% fee limitation imposed by law, design services refer to “the production of designs, plans, drawings and specifications for the accomplishment of any naval public work.”

**Engineering Services (ES).** A-E services other than design work, such as, engineering investigations, studies, surveys, soils investigations, inspections, reports and tests.

**COMNAVFACENGCOM** (also called **NAVFAC**). Commander, Naval Facilities Engineering Command.

**COMPACNAVFACENGCOM** (also called **PACDIV**). Commander, Pacific Division, Naval Facilities Engineering Command.

**Commander, U.S. Naval Forces Japan (COMNAVFORJAPAN).** Responsible for coordinating all U.S. Navy and U.S. Marine Corps Activities in Japan, including liaison with GOJ.

**Contractor Quality Control (CQC).** A method of quality control in which the construction contractor conducts most of the inspections.

**DFARS.** Department of Defense Supplement to the Federal Acquisition Regulation.

**DOD.** Department of Defense.

**Federal Acquisition Regulation (FAR).** The primary Government regulation used by all U.S. Federal agencies in the acquisition of supplies and services. A complete set of FAR (and other contract) clauses applicable to A-E contracts is available at OICC FE. FAR and other contract clauses applicable to A-E contracts are contained in Appendix A.

**GOJ.** Government of Japan.

**NAPS.** Navy Acquisition Procedures Supplement,

**NAVFACENGCOM.** Naval Facilities Engineering Command, Alexandria, Virginia (formerly Bureau of Yards and Docks). Often referred to as NAVFAC.

**NEEACT.** U.S. Naval Electronics Engineering Activity, Yokosuka

**Officer in Charge of Construction (OICC).** Represents the Commander, Naval Facilities Engineering Command, in the administration of all construction contracts.

**OICC Far East (also OICC FE).** Officer in Charge of Construction, Pacific Division, Naval Facilities Engineering Command Detachment, Far East, Yokosuka, Japan.

**Pacific Division, Naval Facilities Engineering Command (PACNAVFACENGCOM).** Often referred to as PACDIV; parent command of OICC Far East. Pacific Ocean geographical Engineering Field Division (EFD) of NAVFAC.

**Post Construction Award Services (PCAS).** Designer provided construction support services, including: review of shop drawings and equipment/material submittals; consultation; preparation of record (as-built condition) drawings; preparation of aperture cards.

**Project Engineering Documentation (PED).** Usually approved Special Project Request: Step II Submission (on Form NAVFAC 9-11014/64 of 11-68). For Family Housing projects, the PED is the approved Military Construction Project Data (on DD Form 1391).

**Project Design Engineer (PDE).** The OICC Far East technical representative assigned to a specific contract who is the single point of communication with the contracted A-E on all matters concerning the A-E contract. The authority of the PDE is delegated by the Contracting Officer.

**Public Works Officer (PWO).** Represents the outlying customer activity on all facility related projects. Generally the PWO is the “requestor” of services performed by OICC FE/PWC Yokosuka and is responsible for “scope” validation and ensuring that the functional requirements of the project are included in the plans and specifications. Outlying activities include: U.S. Naval Air Facility Atsugi; U.S. Naval Computers & Telecommunications Station Japan, Kamiseya; Marine Corps Air Station Iwakuni; U.S. Fleet Activities Sasebo; U.S. Naval Air Facility Misawa; Marine Corps Base Camp S.D. Butler, Okinawa; U.S. Fleet Activities Chinhae, Korea.

**PWC Yokosuka.** U.S. Navy Public Works Center, Yokosuka, Japan.

**Resident Officer in Charge of Construction (ROICC).** Administers, for the OICC, construction contracts at specified Navy and **Marine Corps** activities.

"Scope," “**Scope of Work**” or “**Statement of Architect-Engineer Services.**” Defines the A-E services to be performed under the specified contract. Provides: (1) the project requirements; (2) the estimated cost of construction; (3) the schedule of submittals; (4) any special or unusual circumstances relating to the project.

**Staff Civil Engineer (SCE).** Represents the customer activity on all facility related projects. Generally is the “requestor” of services performed by OICC FE/PWC Yokosuka and is responsible for “scope” validation and ensuring that the functional requirements of the project are included in the plans and specifications. Yokosuka activities include: Commander, Fleet Activities Yokosuka, U.S. Naval Fleet & Industrial Supply Center; U.S. Naval Hospital; U.S. Naval Ship Repair Facility.

## **1.4 SELECTION OF A-ES**

**1.4.1 General.** The Brooks Act (P.L. 92-582, Section 902), declared that it is a policy of Congress that “all agencies of the Federal Government select A-E’s on the basis of demonstrated competence and capability.” Moreover, the Law stipulates that the selection shall be based upon the criteria published in the public announcement of the intended procurement.

Following selection of the most qualified firm, the Law requires the negotiation of a contract for the architectural and engineering services at a price or compensation that is “fair and reasonable to the Government.”

**1.4.2 Pre-Negotiation.** Prior to preparation of the fee proposal, if it is convenient to do so, the A-E is urged to conduct a plans review and an on-site visit to thoroughly familiarize himself with the existing site conditions.

Prior to negotiations, the A-E is invited to arrange for a pre-negotiation conference with the Contracting Officer (OICC FE Code 02). Upon his/her discretion, the Contracting Officer may ask the PDE to attend the meeting and assist in discussing, clarifying and suggesting or confirming modifications to the scope of A-E services.

It should be noted that all effort expended by the A-E prior to contract award is solely for the A-E’s convenience and is at his own expense.

## **1.5 TYPES OF SERVICES**

An A-E contract awarded by OICC FE will usually include three types of services--Design, Engineering and Post Construction Award Services. The required services may include any discipline from the entire spectrum of disciplines in the field of engineering. A description of the three types of services is as follows.

**1.5.1 Design Services** include the preparation of plans and specifications (to be used in a construction contract) and the cost estimate (of the labor, materials, equipment, etc., required to construct the project).

**1.5.1.1** Preliminary Plans, Specifications and Cost Estimates are sometimes authorized in advance of final plans and specifications to assure that requests for authorization and funding are sound. Under this type of service, the A-E will develop the plans to the requested percentage of completion and prepare a corresponding outline specification and cost estimate, as appropriate, to the percentage of plans completion.

**1.5.2 Engineering Services** as defined in paragraph 1.3. Examples of Engineering Services include the following.

**1.5.2.1** Project Engineering Documentation (Step II Submission). The A-E is requested to prepare Step II project documentation which provides justification for the funding of Navy Operating & Maintenance (O&M,N) and Defense Business Operating Fund (DBOF) projects. Step II's are prepared in accordance with OPNAVINST 11010.20 series FACILITIES PROJECT MANUAL on NAVFAC (Form) 11014/64 (Rev. 5-74).

**1.5.2.2** Engineering Studies or Feasibility Studies. For this type of service, the A-E conducts a study and presents his findings and recommendations in a report. To complete the study, the A-E shall collect and analyze data and present the accumulated information in a written report containing text, charts, tables, drawings, sketches, diagrams, etc., as needed to clearly substantiate the conclusions and recommendations of the study.

**1.5.2.3** Soil Investigation, Test and Reports are generally requested in conjunction with design services where foundation design and/or land cut and fill are involved.

**1.5.2.4** Topographic and Cadastral Surveys are used to site a project in relation to the property boundaries and to provide site preparation information, such as grading, excavation and fill requirements. These surveys are used to establish boundaries for legal descriptions of real estate holdings and for the acquisition of new easements and real estate.

**1.5.2.5** Hydrographic Surveys include the sounding of waterways or bodies of water with an electronic echo sounder or lead line. When requested to provide such a survey, the A-E shall prepare and submit a report that includes a plot of the soundings and the computations regarding the indicated quantities.

**1.5.2.6** Landscape Design includes the development of planting plans that add aesthetic value to the overall project design. PACNAVFACENGCOM P-900, A Guide to Landscaping & Grounds Maintenance, shall be used as a guide.

**1.5.2.7** Interior Design includes the development of a coordinated decoration plan for the interior of a building.

In the development of the plan, the A-E may select color schemes, interior furnishings, furniture and special surface (e.g., wall or ceiling) finishes. Interior design engineering services may also include the preparation of renderings and procurement packages for various interior furnishing (i.e., a "Buy Package").

**1.5.2.8 Economic Analyses.** Prior to beginning the design, the A-E may be requested to determine the various design alternatives and prepare a life cycle cost analysis to evaluate the cost effectiveness of each alternative. The economic analysis shall be a Type I Life Cycle Cost Analysis prepared in accordance with NAVFAC P-442, Economic Analysis Handbook (June 1986).

**1.5.2.9 Low Bid Analyses.** After bid opening, when the low bid is more than plus-or-minus 10 per cent of the Government Estimate, the A-E will be requested to prepare a low bid analysis. The A-E shall evaluate the low bid and identify the areas where there is a significant difference between the Government Estimate and the low bid. The A-E shall submit the results of the analysis to the PDE (by telecopy, if necessary) by the date requested by the A-E.

**1.5.3 Post Construction Award Services** are services provided by the A-E following award of the construction contract. The cost of PCAS is normally negotiated in advance and are awarded as options to the basic A-E Design and Engineering Services contract. For OICC FE awarded contracts, Field Consultation During Construction, Review of Contractor Submittals and Preparation of As-Built Condition (or Record) Drawings and Aperture Cards are the usual services requested.

Refer to SECTION 4. POST CONSTRUCTION AWARD SERVICES and Appendix B for more detailed discussions of PCAS.

## **1.6 TYPES OF A-E CONTRACTS**

**1.6.1 Firm Fixed Price (Lump Sum) Contracts.** The negotiated and awarded contract price includes all items of work identified in the "Scope" and is not subject to adjustment. If, in the execution of the required work, the A-E expends more than the awarded fee, the A-E incurs the loss. If the A-E expends less than the awarded fee, the A-E incurs the gain (in addition to the level of profit already negotiated and awarded with the contract). This type of contract places the burden of risk performance on the A-E.

**1.6.2 Indefinite Quantity (IDQ) Contracts** allow the Government to order project designs under an existing contract by means of delivery orders issued on DD Form 1155. (Refer to Appendix C for a sample DD Form 1155.) Each delivery order is a firm fixed priced unit of work. An IDQ contract contains rates negotiated in advance (of the first delivery order) for labor, overhead, profit and other costs associated with services to be performed under the contract. The IDQ contract length is one (1) year with, if included in the contract, an option to extend the contract an additional year. The Government may or may not exercise the option to extend. The maximum (cumulative) annual fee to be awarded is stipulated in the public announcement of the solicitation. The maximum cumulative fee is subject to a \$500,000 ceiling, with the added condition that the fee for any single delivery order not exceed \$200,000.

**1.6.3 Small Purchase Contracts** are defined to be contracts in which the acquisition amount does not exceed \$25,000. Award of Small Purchase A-E Contracts follow simplified procedures, in accordance with FAR 36.6, which in turn, implements the provisions of the Brooks Act.

**1.6.4 Sole Source Contracts.** The legal requirement for public announcement is “to assure the broadest publicity concerning Government A/E se&e procurement” and thereby ensure a high level of competition in the award of A-E contracts. However, when there is no competition (e.g., when only one A-E firm responds to a synopsis), sole source contracting procedures are followed. Sole source contract awards exceeding \$100,000 require PACNAVFACENGCOM approval; sole source contract awards exceeding \$1,000,000 require NAVFACENGCOM approval.

**1.6.5. Non-Appropriated Funded (NAF) Contracts.** Procurement of NAF A-E contracts was previously exempted from the Brooks Act procedures. In FY 93, NAVFACENGCOM rescinded the exemption and required full implementation of Brooks Act procedures for all NAF A-E contracts. NAF activities include the Navy Exchange/Commissary and all Morale, Welfare and Recreation (MWR) activities, including the clubs, bowling alleys, golf courses, restaurants and other food concessions, swimming pools, etc.

## **1.7 A-E DESIGN PERFORMANCE AWARDS**

To provide appropriate recognition for outstanding performance and design, the Navy participates in the A-E awards program. The general criteria for awards' selection is as follows.

- a. **Appropriate Design.** The designed solution conformed to all appropriate Department of Defense and Department of the Navy criteria; while satisfying the both the customer's needs and funding constraints.
- b. **Cost Effectiveness.** The construction contract award amount did not exceed the programmed budget authorization.
- c. **Low Change Order Rate.** The number of modifications issued under the construction contract was below the NAVFAC average.
- d. **Mission Support,** The constructed design adequately met the customer's mission requirements and stated needs.
- e. **Quality Control.** Construction contract documents (i.e., drawings and specifications) clearly indentified the work to be performed. The drawings and specifications were complete, concise and well coordinated among the various disciplines.
- f. **Timely Design Effort.** The design was completed within the contracted schedule.

- g. Cooperation. The A-E provided timely and high quality responses to Government requests for assistance during the design and construction phases of the project.

## **1.8 A-E PERFORMANCE EVALUATION.**

An interim A-E performance evaluation is prepared for each A-E contract upon completion of the design and a final A-E performance evaluation is prepared upon contract completion (i.e., Final Invoice processed and A-E Statement of Release has been received by the Government). Performance evaluations are recorded on SF Form 1421. For Indefinite Quantity A-E contracts, an interim and a final evaluation are prepared for each delivery order.

Refer to Appendix C for a sample SF Form 1421.

Outstanding or unsatisfactory evaluations are forwarded to the A-E. For unsatisfactory evaluations, the A-E is given an opportunity to formally respond to any item of unsatisfactory performance. Satisfactory evaluations are not normally forwarded to the A-E. Upon receipt of a written request to that effect, the Contracting Officer will send a copy of a satisfactory performance evaluation to the A-E.

The completed evaluations are permanently retained by OICC FE. All evaluations are thereby available for review and consideration by future A-E Slate and Selection Boards.

## **1.9 A-E LIABILITY**

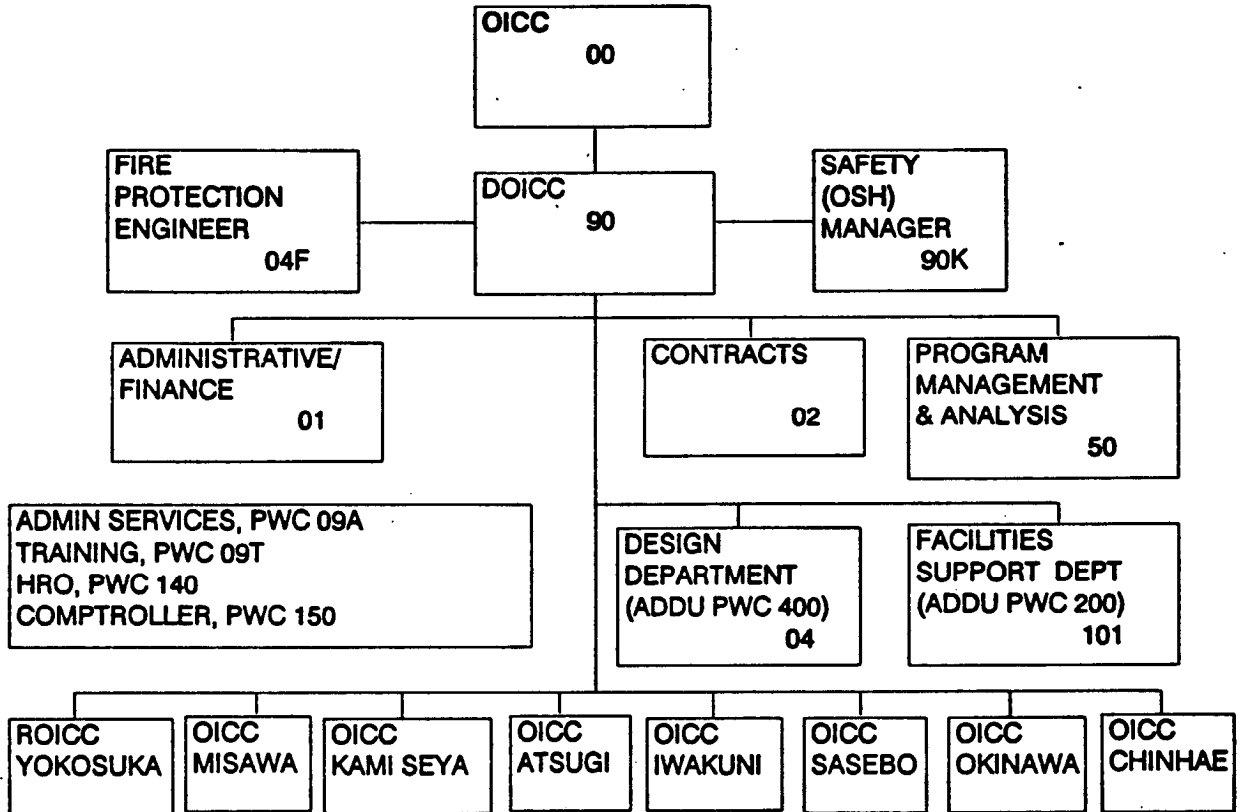
Construction contract modifications resulting from design errors or omissions are reviewed to determine whether the A-E will be held responsible for compensating the Government for damages incurred. Cases involving A-E liability are actively pursued by the Government. In several instances, A-E liability have resulted from the A-E's failure to provide timely response to Government requested assistance to resolve a construction problem. For more information relating to A-E liability, refer to Appendix D.

## **1.10 CONSTRUCTION CONTRACTS WITH A-ES**

FAR 36.209 clearly states that, "No contract for the construction of a project shall be awarded to the firm that designed the project or its subsidiaries or affiliates, except with the approval of the head of the agency or authorized representative." For OICC FE contracts, COMPACNAVFACENGCOM is the head of the agency.



# 1.11 ORGANIZATIONAL CHART OF OICC FE



## **SECTION 2. GENERAL PERFORMANCE REQUIREMENTS**

### **2.1 RESPONSIBILITY**

The basic A-E responsibilities are contained in NAVFAC Contracting Manual P-68 and in the awarded contract clauses entitled “RESPONSIBILITY OF THE ARCHITECT-ENGINEER” and “TECHNICAL ADEQUACY” of OICC FE 4330/11, GENERAL PROVISIONS.

OICC FE contract clause “38. FAR 52.23623, RESPONSIBILITY OF THE ARCHITECT-ENGINEER CONTRACTOR (APR 1984)” is as follows.

(a) The Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all designs, drawings, specifications, and other services furnished by the Contractor under this contract. The Contractor shall, without additional compensation, correct or revise any errors or deficiencies in its designs, drawings, specifications, and other services.

(b) Neither the Government’s review, approval or acceptance of, nor payment for, the services required under this contract shall be construed to operate as a waiver of any rights under this contract or of any cause of action arising out of the performance of this contract, and the Contractor shall be and remain liable to the Government in accordance with applicable law for all damages to the Government caused by the Contractor’s negligent performance of any of the services furnished under this contract.

(c) The rights and remedies of the Government provided for under this contract are in addition to any other rights and remedies provided by law.

(d) If the Contractor is comprised of more than one legal entity, each such entity shall be jointly and severally liable hereunder.

OICC FE contract clause “57. 52.257-10000, A/E CONTRACTS FOR CONSULTATION AND ADVICE (NAVFAC SEP 88)” is as follows.

In addition to the services required by any other contract provisions, the contractor shall provide work-days of general engineering services and consultation at the construction site or at such other locations as the Government may desire, when and as required by the Contracting Officer during the course of construction.

**2.1.1 Project Cost Limitations.** Refer to FAR 52.236-22 DESIGN WITHIN FUNDING LIMITATIONS (APR 1984). At the time of Final Design Submittal, the A-E cost estimate for the designed project shall not exceed the Estimated Construction Cost (ECC) indicated in the A-E “Scope of Work.” The A-E shall notify the PDE as soon as it becomes evident that the project described by the Project Engineering Documents (Step II or DD Form 1391) cannot be designed within the indicated ECC. Timely notification by the A-E cannot be overemphasized, since appropriate corrective measures to ensure continuation of the project require higher level approval and the associated lead time.

Paragraph (a) of OICC FE contract clause “37. FAR 52.236-22, DESIGN WITHIN FUNDING LIMITATIONS (APR 1984) is as follows.

(a) The Contractor shall accomplish the design services required under this contract so as to permit the award of a contract, using standard Federal Acquisition Regulation procedures for the construction of the facilities designed at a price that does not exceed the estimated construction contract price as set forth in paragraph (c) below. When bids or proposals for the construction contract are received that exceed the estimated price, the contractor shall perform such redesign and other services as are necessary to permit contract award within the funding limitation. These additional services shall be performed at no increase in the price of this contract. However, the Contractor shall not be required to perform such additional services at no cost to the Government if the unfavorable bids or proposals are the result of conditions beyond its reasonable control.

**2.1.2 Accuracy and Coordination of Work.** Drawings and specifications must be explicit, clear and accurate so that all potential bidders of the construction contract will have the (same) equitable basis for formulating their bids.

**2.1.3 Correction of Deficiencies in Design.** Refer to FAR 52.236-23 “RESPONSIBILITY OF THE ARCHITECT-ENGINEER CONTRACTOR (APR 1984)” and ADDITIONAL CLAUSES: “TECHNICAL ADEQUACY.” The A-E shall correct all deficiencies in the design, without additional compensation. Correction may include preparation of additional drawings and specifications, revised drawings and specifications, a revised cost estimate, preparation of a construction contract solicitation amendment (prior to construction contract award), preparation of a construction contract modification document (sometimes referred to as Change Order Request, C.O.R., following contract award, during construction), on-site consultation and other services as required to remedy the deficiency(&).

In preparing the solicitation amendment or contract modification, the A-E shall also provide written substantiation for the change and the impact of the change on the overall quality of the project, the completion time of the construction and other information as relevant to the project.

**2.1.4 Cross Discipline Work.** Architects and engineers can only supervise and review work and sign the drawings in the discipline for which they are registered. No cross discipline work will be allowed.

## **2.2 STATEMENT OF ARCHITECT-ENGINEERING SERVICES**

A description of the work to be performed, the required submittals and the submittal schedule are indicated in the Statement of Architect-Engineering Services which is sometimes referred to as the “Scope of Work” or the “Scope.” A preliminary “Scope” is provided to the A-E together with the Request for Fee Proposal.

Following successful negotiation of the A-E fee, the final “Scope” is provided to the A-E as part of the signed and executed contract document. This final “Scope” defines the extent of the services to be provided by the A-E and the extent of the project (e.g., facility to be repaired or conditions to be studied).

**2.2.1 Precedence.** In the event of discrepancy between the “Scope,” and this guide or any referenced publication, the provisions of the “Scope” shall govern to the extent of the difference(s).

**2.2.2 Modifications.** Refer to FAR CLAUSE 52.243-1. The Contracting Officer is solely responsible for awarding an A-E contract and authorizing any contract modifications, including “Scope” changes. The Government is not obligated to pay for any services performed by the A-E outside of the contracted “Scope of Work.” Specifically, this applies to work performed by the A-E in response to direction provided by Government personnel, including, but not limited to PDEs, EICs, program managers, and customer activity personnel (military officers and enlisted personnel; civilian engineers; shop workers; etc.).

In the course of providing authorized services, the A-E may become aware of additional work or services that need to be provided to successfully accomplish the full intent of the project. Or the A-E may receive clarification of customer requirements within the general scope of the project and will be required to make necessary adjustments to the type and quantity of services to be performed. In such situations when the A-E desires additional compensation, the A-E is requested to provide a formal description of and a justification for the additional work. If appropriate and funding is available, the Contracting Officer will negotiate a modification to the contract.

### **2.3 LIAISON BETWEEN A-E AND OICC FAR EAST**

Prior to negotiation and award of the contract, the A-E shall designate an individual who will be directly responsible for, and can be contacted locally (within Japan) by telephone, on all matters pertaining to the contract. This individual must have full authority to negotiate final scope and fees for the A-E firm. The Contracting Officer, in turn, will designate the PDE assigned to the contract. All matters relating to the execution or administration of the awarded contract should be directed to the PDE.

### **2.4 AUTHORIZATION TO PROCEED**

Upon receipt of a contract signed and executed by the Contracting Officer, the A-E is given authority to proceed with the contract. Conference agreements and verbal commitments are tentative until confirmed in writing by the Contracting Officer.

**2.4.1 Authorized Contracting Officers.** For OICC FE, the OICC (Code 00), the Deputy OICC (Code 90), the Director and the Branch Managers of the Contracts Department (Code 02) are authorized Contracting Officers.

### **2.5 BASIC CRITERIA**

The basic criteria to be used in the preparation of drawings, specifications and cost estimates are contained in Military Handbook (Mil-Hdbk) 1006/1, Policy and Procedures for Project Drawing and Specification Preparation. Technical direction and standards for design are contained in a series of NAVFAC Design Manuals (DM) and Military Handbooks. The complete list, of Manuals and Handbooks are listed in Appendix E. Design Manuals, Military Handbooks and

other referenced manuals, instructions and materials are available at and may be furnished on a loan basis from OICC FE. Standard references, textbooks, commercial and industry standard information, etc., are not available for loan from OICC FE.

## **2.6 AVAILABLE SITE INFORMATION**

All available information at OICC FE, relating to the existing site conditions will be made available to the A-E for inspection at the OICC FE plan files and reproduction area. The OICC FE plan files and reproduction area (PWC Code 411) has maps, aerial photographs and nearly all drawings (either in full size or aperture card form) for facilities or facility repair projects constructed after 1945. As-built drawings for waterfront facilities, drydocks and underground P.O.L. pipelines and storage facilities constructed prior to 1945 are scarce, if at all available.

It is the A-E's responsibility to thoroughly familiarize himself with the existing site conditions and research all available information.

Because of the large number of available drawings, the A-E is advised that the plans search may take hours as opposed to minutes and may require several visits. OICC FE will make reproduction facilities available to the A-E to duplicate all drawings that the A-E has determined to be useful.

Site information not available at OICC FE may be available at the cognizant field activity.

**2.6.1 A-E Verification of Information Obtained.** The A-E shall evaluate and validate all information obtained from the Government (e.g., from existing drawings and verbal or written information provided by Government personnel). Moreover, the A-E shall obtain all additional field information that is required to completely characterize the existing conditions, as related to the project to be designed.

Failure to include pertinent existing field conditions which were visible or whose existence could be determined from existing drawings will be considered an A-E deficiency. Under FAR Clause, "Responsibility of the Architect-Engineer Contractor," the A-E will be required to correct all drawings, specifications and the cost estimates without additional compensation. (Additional) construction costs resulting from A-E omissions and errors will be processed, by the Government, as an A-E liability claim against the A-E.

**2.6.2 Exposure of Existing Work.** If, while conducting the site investigation, the A-E determines that exposure of existing sub-surface structures is necessary, the A-E shall indicate the locations where such exposure is required. Normally, accomplishment will be by the Government; in certain situations, the A-E may be requested to accomplish the work. If accomplished by the A-E, the work shall proceed only upon written notification by the Contracting Officer.

## **2.7 SECURITY CLEARANCES**

**2.7.1 Gate Passes.** Procedures for obtaining gate passes for A-E personnel and vehicles will vary, depending upon the military installation where entry is desired. The A-E is requested to coordinate all pass requirements with the PDE assigned to the contract.

The general instructions regarding obtaining passes for the various military installations and controlled areas are provided in Appendix F.

**2.7.2 Classified Material.** Instructions for obtaining clearances to handle classified material or visit classified areas will be issued, upon request, on an as-needed basis.

## **2.8 CONTACTS**

**2.8.1 Contact with Government Activities.** Conferences with the Staff Civil Engineer (SCE) or Public Works Officer (PWO) shall be conducted as required to obtain basic design data. The PDE will make appropriate arrangements for the first (pre-design) meeting, at which time the “Scope” and schedule of performance will be discussed. Subsequent meetings, if required, shall be arranged by the A-E, with appropriate PDE notification. Written minutes for all A-E conferences with the SCE or PWO personnel, including telephone conversations during which design scope, design concept and project cost decisions are made shall be forwarded to the PDE within a timeframe previously agree to or as specified in the contract.

Prior to commencing any site work, the A-E shall obtain the approval of the activity SCE or PWO to conduct site investigations, facility surveys, soils sampling and testing, etc. Upon completion of the work, the A-E shall notify the SCE or PWO to that effect.

**2.8.2 Contact with Public Utilities and Private Property Owners.** Except as described by the “Scope” or as authorized, in writing, by the Contracting Officer, the A-E shall not contact or supply information to any public utility organization or individual and/or private property owner. COMNAVFORJAPAN will make all contacts regarding these matters, including the obtaining of permits for the A-E’s entry to private property.

## **2.9 SUB-SURFACE CONDITIONS**

The A-E shall conduct all soils investigations required by the “Scope.” Complete reports of soils investigations, including specific interpretations and recommendations shall be included in the “Basis of Design.” Soils investigations shall be conducted in accordance with Section 6 of this Guide.

In situations where a soils investigation is not required by the “Scope” and the A-E considers it in the best interest of the project to conduct a soils investigation, the A-E shall inform the PDE to that effect.

## **2.10 SURVEYS**

The A-E shall conduct field surveys to comply with the requirements of the contract. In general, such surveys may include topographic site surveys, alignment surveys, profiles and cross sections. Site surveys shall be in sufficient detail to permit an accurate identification of finish grades and to show all existing structures, pavements, utility lines, obstructions, etc., within the project scope.

The A-E shall obtain and incorporate into the design, information regarding drainage areas, connections to existing roads, sizes and locations of existing utilities and the data needed to establish the points of connection for project utilities.

Refer to Military Handbook 1005 for field survey requirements necessary to support Geotechnical Investigations.

**2.10.1 Survey Points.** When required by the "Scope," the A-E shall set a sufficient number of semi-permanent survey points to serve as initial horizontal and vertical survey control references for the construction of the project. The horizontal control points and bench marks shall be recorded in the survey field book and shall be shown and described on the drawings. Likewise, elevation datum points shall be recorded in the survey field book and shall be shown on the drawings.

**2.10.2 Use of Existing Maps and Survey Data.** If maps or other survey data are furnished by the Government, the A-E shall consider the information as furnished for assistance only. The A-E shall field verify and, if appropriate, correct and update any information provided by the Government. It is the responsibility of the A-E to ensure that the survey information used in the preparation of drawings, specifications and the cost estimate are accurate and complete.

**2.10.3 Survey Parties.** Requests for survey party entry authorization shall be submitted to the PDE at least five (5) working days prior to the start of the survey. Survey parties shall report to the activity PWO, SCE or their designated representative prior to commencing any survey work. Also, upon completion of the survey work and prior to leaving the activity, the survey party shall notify this same Government individual that the survey has been completed.

## **2.11 OICC FAR EAST CONSULTANTS**

OICC FE maintains a technical staff of architects and engineers who are available for consultation on the problems unique to Navy shore station construction. Upon request by the A-E, the PDE will schedule consultation conferences with members of the technical staff. The following Branches, Divisions and Specialists are a part of OICC FE.

**2.11.1 Design Division (PWC Code 400).** Personnel in the following engineering disciplines are available for consultation on technical matters.

- Architectural Branch
- Civil/Structural Branch
- Mechanical Branch

Electrical Branch  
Specifications Branch  
Cost Estimating Branch  
Facilities Support Contracting Branch

**2.11.2 Contract Division (OICC FE Code 02).** OICC FE personnel are available for consultation on administrative matters.

**2.11.3 Other OICC FE Consultants.** Various other technical specialists are available for consultation at OICC FE. The specialties include the following.

Value Engineering  
Energy Conservation  
Utilities Engineering  
Environmental Engineering  
Fire Protection Engineering

## **2.12 UTILITIES**

The A-E shall evaluate, and report in the Basis of Design, the impact of the project's (increased) loads on the activity (or station-wide) utilities supply and distribution systems. Particular attention shall be given to the following:

- a. Adequacy of affected portions of the distribution systems to carry the increased load;
- b. Adequacy of the base or station service entrance to carry the increased load, in the case of purchased utilities; and
- c. Adequacy of on-station generating plants to carry the increased load.

**2.12.1** Should it be necessary to utilize existing underground electrical duct lines, the A-E shall field check the proposed manholes and duct lines. Availability and size of all conduits proposed for use in the duct banks shall be verified. The conduits shall be "blown and rodded" by the A-E to verify that the conduits are usable. Once the preferred utility routing is determined, the A-E shall submit the proposed duct and conduit assignment plan to the station's Utilities Department for approval. Approval by the Utilities Department is required prior to submission of the Preliminary Design Submittal.

## **2.13 A-E RELEASE OF INFORMATION**

The A-E shall not release any information concerning any project to anyone other than authorized U.S. Navy personnel. The A-E shall not release any information for publication pertinent to a project under design or construction; make public speeches; or release information in any other manner without first obtaining clearance and a written release from the OICC FE.



All material for which clearance is desired shall be submitted in duplicate. During the bidding period, the A-E shall refer all requests by prospective bidders for clarification or intent of the drawings and specifications and all questions relative to estimated contract costs, bidding forms, bonds and contract forms to the Contracts Division (Code 02) of OICC FE.

## **2.14 PROGRESS PAYMENTS**

Normally, partial payments are made at the Preliminary (35%), Pre-Final (100%) and Final stages of the design. Alternatively, partial payments will be made upon request by the A-E, whenever a significant amount of the contracted services have been accomplished (e.g., site investigations). However, no more than one (1) invoice per month (per contract) will be accepted by OICC FE for payment. Payments will be made on the basis of the overall percentage of completion, subject to a ten percent retention of the awarded contract amount. Final payment will be made after:

- 1) the Final Submittal has been reviewed and accepted;
- 2) the A-E has submitted a properly executed Contractor's release; and
- 3) the A-E has returned all materials borrowed from the Government.

**2.14.1 Invoice Procedure.** An original and two (2) copies of NAVFAC Form 10-7300/41 and the necessary supporting information sheets (OICC FE 10-7300), "Contractor's Invoice" shown in Appendix C, shall be submitted for payment. The PDE will furnish blank forms upon request by the A-E.

## **2.15 CONTRACTOR'S RELEASE**

A Contractor's release will be required for final payment. Upon completion of the contract work, an original and one (1) copy of NAVFAC Form 4330/7, "CONTRACTOR'S RELEASE," shall be completed and submitted with the required number of copies of the Contractor's Invoice and Contract Performance Statement for final payment. The Contractor's Release form shall be properly executed and all copies shall be appropriately signed. A sample of a completed Contractor's Release form is shown in Appendix C.

## **SECTION 3. DESIGN SUBMITTALS AND REVIEWS**

### **3.1 Submittals**

The required submittals will be identified in the “Scope.” Generally, submittals shall be made at the Preliminary (35%), Pre-Final (100%) and Final stages of the design. Government reviews will be made at the 35% and 100% stages and the resulting comments will be forwarded to the A-E. The Government will conduct a “back check” review on the Final Submittal to ensure that Pre-Final submittal review comments have been incorporated or resolved.

**3.1.1 Schedule for Submittals.** The starting point of the schedule is the contract award date. The time allowed from the award date and the number of copies required for each submittal will be indicated in the “Scope.” It is imperative that the A-E adheres to the indicated schedule; since, for expiring fiscal year funding, late submittals may jeopardize execution of the project. If the A-E cannot accomplish the requested work within the indicated schedule, the A-E shall notify the OICC Contract Specialist upon submittal of the fee proposal, prior to the negotiations. During negotiations, a revised schedule accommodating both the A-E’s schedule and project execution will be arranged.

**3.1.2 Concept Submittal (10%).** A Concept Submittal will be requested for:

- 1) high dollar amount projects where the work request and the project documentation (Step II or DD Form 1391) are not explicitly clear; or
- 2) high risk projects in which several or more design options are available and for which customer and higher level review will be required prior to selection of the design option; or
- 3) “Whole House Repair” and other housing projects in which subjective aesthetic considerations by the user activity determine the direction of the design.

A Concept Submittal will normally be requested in lieu of the Preliminary (35%) Submittal. Concept Submittals shall include any or all of the following, as applicable to the project.

- a. A site plan showing the building footprint in relation to other existing structures in the adjacent areas; streets and sidewalks; utility lines; parking areas; etc.
- b. A list of all affected rooms and spaces in the existing facility and the additional ones that are required for the project to be designed. Indicate the net square foot area for all affected rooms and new rooms; indicate the gross square foot addition to the existing facility.

- c. Scaled floor plans and drawings (may be freehand). Label all rooms/spaces and major equipment. Include critical dimensions for rooms and equipment. Provide brief descriptions of the mechanical and electrical systems proposed for the facility. Include schematic duct layout.
- d. Scaled single line building sections (may be freehand). Show floor to floor, floor to roof and ceiling heights. Indicate materials and construction for floor, exterior walls and roof. Indicate duct space for heating, ventilating and air conditioning (**HVAC**) systems. Indicate space requirements and locations of major electrical work. Indicate (additional) facility utility requirements.
- e. The fire protection system layout. Show all risers, mains and branches to ensure compatibility with the architectural, structural, electrical and mechanical designs.
- f. Scaled single line building elevations. Indicate materials, finish, etc., of the building envelope.
- g. Perspective sketches.
- h. Order of magnitude cost estimate.

**3.1.3 Preliminary (35%) Submittal.** The Preliminary Submittal shall include the following as specified in the “Scope.”

- a. Drawings
- b. Outline Specifications (need not be in final typed form)
- c. Basis of Design (including -Design Calculations)
- d. Preliminary Cost Estimates
- e. Soils Investigation Report
- f. Fire Protection Design Analysis
- g. Review Requirements Checklist

**3.1.4 Pre-Final (100%) Submittal.** The Pre-Final Submittal shall be complete and ready for construction contract bidding and shall include the following as specified in the “Scope.”

- a. Working Drawings, complete with NAVFAC and PWC Drawing Numbers.
- b. Specifications, typed in final form with all required sections

- c. Basis of Design, including Design Calculations
- d. Cost Estimates
- e. Soils Investigation Report
- f. Annotated Review Comments of the previous submittal
- g. All marked review copies of the previous submittal
- h. List of Required Contractor Submittals
- i. Designer to ROICC Report
- j. Annotated Review Requirements Checklist

**3.1.4.1 List of Required Contractor Submittals.** The A-E shall provide a list of the shop drawings, catalog cuts, samples and other items that are required by the Specifications to be submitted by the construction contractor. In addition, the A-E shall indicate the submittals that are to be reviewed by the Government and the submittals that are to be reviewed by the A-E. As a minimum, the A-E shall review all submittals requiring technical review.

**3.1.4.2 Designer to ROICC Report.** In the report, the A-E shall provide: 1) an overall description of the project; 2) a general overview of the construction sequence that was intended, and, in particular, any step(s) or technique(s) critical to the successful completion of the project; 3) any particular aspect of the construction sequence that requires extra attention or inspection by the ROICC; 4) a list of construction items for which field consultation by the A-E is recommended.

**3.1.5 Final Submittal.** The Final Submittal shall include the originals and the specified number of copies of the following as specified in the “Scope.”

- a. Working Drawings
- b. Specifications
- c. Cost Estimates
- d. Basis of Design, including Design Calculations
- e. Soils Investigation Report
- f. Field Notes (including survey field books)
- g. Review Requirements Checklist

Government reviews do not relieve the A-E of the responsibility for the technical adequacy of the plans (drawings) and specifications. (Refer to the Contract Clause “TECHNICAL ADEQUACY.”) A-E professional design performance includes preparation of a complete and accurate set of drawings, specifications, cost estimates, etc. In certain situations, the Government may comment on the technical aspect of the A-E’s work. Satisfactory resolution of the comment and complete responsibility for the technical adequacy of the resulting drawings and specifications remain with the A-E.

The Government will not provide a checking service, for the A-E. The A-E shall check all elements of his work prior to submission for Government review. Inadequate submittals will be returned to the A-E for additional work without an allowance for increased design time or compensation.

**3.3.1 Time Required for Review.** Government review time for each submittal will be indicated in the “Scope.” Review comments returned to the A-E beyond the time limit indicated in the “Scope” will be cause for a day-for-day extension of time to the A-E on all future submittals.

**3.3.2 Form of Review.** Government comments will be made on the submittals (i.e., marked-up drawings, specifications, cost estimates, etc., will be provided to the A-E) and summarized on NAVFAC 11012/9 (5-90), the “ENGINEERING AND DESIGN CRITERIA REVIEW” form. Refer to Appendix B for a sample form. Normally, each engineering discipline will review and mark-up a different copy of the submittal; on occasion, two (2) or more disciplines may comment on the same copy of the submittal.

**3.3.3 Value Engineering (VE).** The Government will conduct a VE team study on the Preliminary Design Submittal on projects with Estimated Construction Costs (ECC) in excess of \$200,000. The VE studies will be conducted by a team of in-house OICC FE staff personnel trained in VE technology.

The purpose of the VE program is to improve the cost performance of the project while retaining the essential functional aspects of the project.

In response to the VE recommendations, the A-E is required to review and comment on the study report and to participate in the decision to accept and implement or reject the various VE alternatives. Significant additional redesign effort needed to incorporate accepted VE alternatives will be accomplished as a modification to the A-E contract.

### **3.4 A-E RESPONSE TO REVIEW COMMENTS**

The A-E shall evaluate the various review comments and incorporate, in the next submittal, any comments for which (A-E) concurrence is given.

When the intent or meaning of a comment is unclear or comments between reviewers are not consistent or compatible, the A-E shall notify the PDE and ask for clarification.

The A-E shall also notify the PDE when, by incorporating any or all comment(s), the project will exceed the authorized project scope or funding limit, respectively.

With regard to comments that the A-E does not concur with, the A-E shall provide sufficient technical justification for not incorporating the comment.

**3.4.1 Form of A-E Response to Review Comments.** In response to Government review comments, the A-E shall annotate in the column, “RESOLUTION OF COMMENT,” one of the following.

- a. “Concur” when A-E concurrence is given. The A-E shall also provide a brief explanation of the action taken to incorporate the comment in the next submittal.
- b. “Do Not Concur” when A-E concurrence is not given and the next submittal will not include any accompanying changes. The A-E shall also provide the justification for the nonconcurrence.
- c. “Withdraw” when, after discussion with the originator of the review comment, the originator withdraws the comment. The A-E shall provide the information (e.g., telephone conversation with originator, date and summary of discussion) supporting the withdrawal.

The A-E shall resolve all review comments with which he “Does Not Concur” within ten (10) days after (A-E) receipt of the review comments. The Annotated Review Comments shall be returned to the PDE within 15 days after (A-E) receipt of the review comments.

### **3.5 A-E DESIGN QUALITY CONTROL PROGRAM.**

During the design process, the A-E shall conduct a formal design quality control program for checking and coordinating drawings, specifications and cost estimates. As part of the quality control program, the A-E shall use the REDICHECK system. To obtain optimal results, the REDICHECK shall be performed by one person (not a team) who is not directly involved in the design of the project. The A-E shall submit the completed REDICHECK Checklist together with the other Final Submittal documents. A sample REDICHECK CHECKLIST is included in Appendix G.

### **3.6 DELIVERY OF SUBMITTALS**

The A-E is requested to hand deliver any original documents.

### **3.7 CORRECTION OF DESIGN DEFICIENCIES.**

In accordance with the A-E Contract Clauses, “RESPONSIBILITY OF THE ARCHITECT-ENGINEER CONTRACTOR” and “TECHNICAL ADEQUACY,” the A-E shall prepare any and all revised drawings, specifications and cost estimates; additional drawings and

specifications; sketches; and other corrected submittal documents; etc., as necessary to remedy the deficiency(ies). If requested, the A-E shall also prepare and submit a letter identifying the deficiency that was corrected and the impact on project cost, quality of construction, etc., as related to the project.

During construction of the project, when construction contractor questions arise due to the poor quality of the drawings or specifications, the A-E shall provide consultation services, without additional compensation. Examples of poor quality include insufficient number of details, illegible printing or line work, grammatical errors, incorrect or conflicting dimensions, incorrect material specification, etc., resulting in contractor confusion regarding the the true intent of the project or project design.

## **SECTION 4. POST CONSTRUCTION AWARD SERVICES (PCAS)**

### **4.1 GENERAL**

PCAS to be performed by the A-E are usually requested after the award of a construction contract. Normally the level of effort and the associated A-E fees for these services are negotiated together with the project design and engineering services fees. The "Scope" will indicate the PCAS to be requested after award of the construction contract. If for some reason (e.g., project cancellation) the construction contract is not awarded, a deductive modification to the awarded A-E contract will be initiated and executed.

**4.1.1 A-E Communications During Construction.** Direct communication between the A-E and the OICC, the ROICC or their designated representatives is authorized only for the services that have been awarded (with the basic A-E contract), as indicated in the "Scope." Direct communication between the A-E and the construction contractor is strictly prohibited, unless authorized by the OICC or his designated representative. If the construction contractor contacts the A-E without prior authorization by the OICC or ROICC, the A-E shall refer the construction contractor to the OICC or ROICC. The A-E shall submit to the ROICC, with a copy to the PDE, a written report of the communication with the construction contractor, within five (5) working days following the contact. The report shall include the purpose and persons involved in the discussions; the date, time and place of the discussions; a summary of the discussions that took place and any agreements that were made.

### **4.2 TYPES OF PCAS**

**4.2.1 Review of Submittals.** As required by the "Scope," the A-E shall review and make recommendations for approval, revision or disapproval of the construction contractor's shop drawings, samples or literature submitted for approval. The time allowed for each review will normally be ten (10) working days unless otherwise indicated on the transmittal. The ten working days includes mailing or delivery time. Reviews shall be expedited to not delay the construction contractor.

The procedure for submittal reviews will be as follows.

**4.2.1.1 ROICC Action.** The ROICC will forward three (3) or more copies of the transmittal sheet, OICC FAR EAST 4330 (4-83), or the construction contractor's transmittal sheet together with the three (3) or more copies of the submittal to the A-E.



**4.2.1.2** A-E Action. The A-E shall review the submittal for compliance with the construction contract requirements. On the face of all copies of each submittal, the A-E shall stamp the following notation.

DEPARTMENT OF THE NAVY  
OFFICER IN CHARGE OF CONSTRUCTION  
PACIFIC DIVISION, NAVAL FACILITIES ENGINEERING COMMAND  
DETACHMENT, FAR EAST  
PSC 473 BOX 61  
FPO AP 96349-2903

RECOMMEND  
 APPROVAL  
 APPROVAL SUBJECT TO THE CORRECTIONS NOTED  
 RETURN FOR CORRECTIONS NOTED AND RESUBMISSION  
 DISAPPROVAL

Subject to the requirements of:

Contract No. \_\_\_\_\_ Spec. No. \_\_\_\_\_

Checked by: (Signature) Date \_\_\_\_\_

The A-E shall mark the recommended action, fill in the appropriate information and sign in the indicated space. The signature should be that of a registered architect or registered engineer, as appropriate to the submittal that has been reviewed. The A-E may assume that his recommendations will be approved by the Government, unless advised to the contrary.

On shop drawings, the A-E shall place the above stamp near the title block or on the reverse side of the drawing, near the title block corner,

Copies of the submittal shall be marked identically. The A-E shall retain one copy and forward all remaining copies to the ROICC using the bottom of the form forwarding letter as his transmittal letter. Expedite the submittal review so that the construction contractor's progress will not be delayed.

The A-E shall attach a separate cover letter to submittals that have a recommended action of "Approval Subject to the Corrections Noted," "Return for Corrections Noted and Resubmission," and "Disapproval." The letter shall clearly describe why the particular action was

recommended. Identify which section, paragraph, standard, code, etc., of the specification or which section, detail, etc., on the drawings of the contract documents that the submittal does not conform to.

In the event that the contractor submits, for approval, material and equipment which does not meet the contract requirements, the A-E shall furnish the following additional information to the ROICC.

- a. An indication whether the substitution is of equal, better or lesser quality than the construction contract requirements.
- b. If of lesser quality, the difference in value.
- c. If of equal or better quality, the advantages to the Government for accepting the substitution at no change in contract price.

**4.2.2 Consultation Services.** When providing consultation services in accordance with the awarded A-E contract, the A-E shall prepare a written report (i.e., minutes) indicating the date, time and location at which each such service was provided. A separate report shall be submitted for each instance in which consultation services were provided. The report shall also include the name(s) and title(s) of all A-E, Government and Contractor personnel in attendance; a description of the problem that required A-E consultation; a summary of the discussions conducted; any conclusions reached and the recommended course of action; and the resulting impact on the construction time and cost.

It is recommended that the A-E maintain a permanent file of all such reports. (NOTE: The A-E is required to submit documentation of the consultation provided, together with the invoice for such services; such a file will support the documentation submitted.)

PCAS Consultation Services are usually negotiated and awarded with each delivery order. The PDE is the Contracting Officer's representative in matters relating to the administration of the contract. The A-E is to provide Consultation Services as requested by the PDE. Except for the Contracting Officer, no other Government representative is authorized to request such services.

In addition, it is the A-E's responsibility to inform the PDE when the quantity of services requested by the PDE exceeds the quantity awarded.

Finally, Consultation Services are paid only when the A-E is requested to provide consultation; the A-E provides the requested consultation; the A-E submits an invoice with the necessary supporting information; and the invoice is verified by the PDE. A deductive modification to the A-E contract will be initiated when Consultation Services are not provided or cannot be verified.

**4.2.2.1 Designer to ROICC Conference.** When included in the "Scope," the A-E shall participate in a Designer to ROICC Conference. A-E participation will usually be requested for large dollar amount, technically complex or high visibility projects. During the conference, the

A-E shall provide to ROICC personnel a general overview of the project and shall specifically address any critically important procedures or unusual features of the project that require special attention.

**4.2.2.2 Preconstruction Conference.** When requested by the PDE, the A-E shall attend the preconstruction conference (sometimes referred to as the “precon”) and be prepared to answer questions regarding the intent of the project/design and the construction contract documents (i.e., drawings and specifications). In the report submitted to the PDE, in addition to the basic information required, the A-E shall also indicate the issues that were raised and not resolved during the “precon.”

**4.2.2.3 On-site Consultation.** The A-E shall provide on-site consultation when requested by the PDE. Normally the ROICC will contact the PDE when such services are required. The A-E shall submit the required written ‘report within five (5) working days following the completion of the on-site visit.

**4.2.2.4 Office Consultation.** The A-E shall provide office consultation, when requested by the PDE and when a field visit is not required. The A-E shall submit the required written report within five (5) working days following the completion of the requested services.

**4.2.2.5 Evaluation of Value Engineering Change Proposal (VECP).** The purpose of a VECP is to achieve a construction cost savings by adjusting the design to permit more economical methods and/or materials of construction and still maintain the operational, functional and aesthetic integrity of the project. When requested by the PDE, the A-E shall analyze VECP’s submitted by the construction contractor and provide a written report recommending approval or disapproval. The A-E shall submit evaluations to the PDE within five (5) working days following the PDE’s request.

**4.2.3 As-Built Drawings.** The A-E shall revise the original drawings to show “as-built” conditions. A set of marked-up prints will be furnished showing the changes resulting from approved shop drawings or from approved deviations from the design on the original drawings. Include size, manufacturer’s name, model number and power input/output characteristics of the equipment installed. Inform the PDE if marked-up prints do not include this information. Time for preparation of the “as-built” shall be not more than 30 calendar days from the time of receipt of the marked prints, unless directed otherwise by the PDE.

**4.2.3.1 Procedure.** The “as-built” drawings shall show the actual construction by using the following procedure.

- a. When optional methods of construction are shown, the method not used shall be crossed out and noted “not built.” Work previously crossed out and noted “omit” or “not in contract” shall remain.
- b. Deleted or superseded portions of the drawings shall be crossed out.

c. Previous revision symbols and circles on all tracings shall remain. All revision data shall remain in the revision space.

d. Indicate equipment model numbers, capacities, ratings, etc.

When the necessary changes have been made on the drawings, the note “as-built condition shown” shall be placed in the revision block. In the case where no corrections on a drawing are necessary, the words “as-built” shall be placed in the revision block. The Contracting Officer or his authorized representative will sign and date the Record Drawings in the revision block.

## **SECTION 5. BASIS OF DESIGN**

### **5.1 PURPOSE**

The Basis of Design (often referred to as the “Basis”) contains information about the project design; the criteria, codes and references that were utilized in the design process; and any supporting technical and/or economic justifications for deviations from standard architectural/engineering practice, criteria, codes or publications referenced by the “Scope.” The Basis also provides a description of pertinent site information and any special requirement or circumstance which may affect the design/construction of the project. Review of the Basis provides the Government with the opportunity to determine whether the A-E developed project is in conformance with established Navy and Department of Defense criteria and is within the authorized scope and funding.

The Basis shall be a bound, indexed presentation of facts that fully describe all aspects of the project design.

The information that the A-E shall include in the Basis are described in the paragraphs starting with paragraph 5.2.2 Design Criteria.

### **5.2 BASIC CRITERIA**

Technical direction and standards for design are contained in MIL-HDBK-1190, “Facility Planning and Design Guide” and in a series of DoD Military Handbooks and NAVFAC Design Manuals (refer to Appendix E for the current listing). The A-E shall cite all criteria used in the preparation of the Basis of Design.

#### **5.2.1 Availability of Criteria Documents**

**5.2.1.1** Construction Criteria Base (CCB). The National Institute of Building Sciences, in cooperation with the DoD, has produced a commercially available system of electronic databases containing private sector, military and other federal construction agencies’ guide specifications, technical manuals, standards, cost estimating programs, etc. The CCB uses optical disc (CD-ROM) technology and is available on an annual subscription basis. Additional information about the CCB information system, the computer hardware and operating system software required to use the system and the major beneficial features of the system, together with a subscription order form are included in Appendix H.

**5.2.1.2** Department of Navy Documents. Hard copies of DoD Military Handbooks, NAVFAC Design Manuals and Instructions and other Navy command design policies and standards referenced in the “Scope” are available on a loan basis from OICC FE. Standard references, textbooks and commercial and industry standards are not available for loan.

**5.2.1.2.1 Base Exterior Architecture Plan (BEAP).** The BEAP provides general overall guidelines for upgrading the overall appearance of Navy Shore facilities through coordination of design concepts for landscaping, signs and building colors. BEAP studies are developed in conjunction with an activity's master plan. The A-E shall ensure that project designs are developed in accordance with the BEAP.

**5.2.2 Design Criteria.** The A-E shall list the design criteria, such as the DoD Military Handbooks; NAVFAC Design Manuals, technical publications, instructions, etc; industry standard references; and laws and codes utilized in the design. The A-E shall use the latest edition of the cited reference.

Other references which the A-E is advised to review include: 1) NAVFAC P-1010 Lessons Learned from Design and Engineering of Naval Facilities; 2) NAVFAC Design Policy Letters; and 3) NAVFAC Criteria Interpretation 'and Waivers.

In addition, the A-E shall "design for maintainability" and ensure that the facility designed utilizes components which can be readily serviced, maintained and/or replaced. The objective is to design a facility which, not only minimizes initial first costs, but also considers the manner in which the facility is to be operated and maintained.

### **5.3 DESIGN COMPUTATIONS**

Prepare accurate and legible computations for all phases of the design on letter size (nominal 8-1/2 x 11") paper. The computations shall be sufficiently clear to allow review by the Government.

### **5.4 CIVIL**

**5.4.1 Site Grading.** The A-E shall provide positive drainage away from structures. In addition, the A-E shall provide a positive differential between the facility finished floor elevations and the finished grade elevations of areas adjacent to the facility. Minimize earthwork with a reasonable balance between cut and fill quantities.

**5.4.1.1 Drainage Calculations.** Provide drainage calculations for culverts and drains where the pertinent drainage area exceeds two (2) hectares. Since there is no requirement for areas less than two (2) hectares, the A-E shall exercise judgement and provide calculations, as necessary, to substantiate the proposed drainage design.

**5.4.2 Storm Sewer System and Surface Drainage.** Indicate the storm flow for the project and clearly identify all information and assumptions used in the derivation. In addition, determine the capacity of the existing system and determine whether the existing system has sufficient capacity to accommodate the additional flow. Also provide calculations to verify the quantity of storm flow and the size, material, class and "D" load of all storm sewers, culverts and drop inlets. Finally, provide a small scale topographic map that depicts the individual drainage areas and their overland flow path.

**5.4.3 Water Supply and Distribution.** Provide any supporting information and calculations together with the following.

- a. A description of the existing system, including a discussion of the type, capacity, condition, present water usage and unsatisfactory elements or component parts (with regard to expanding the supply distribution system).
- b. A statement of the type of proposed construction, including materials for water mains, type of well, as applicable, etc.
- c. For distribution systems, calculated domestic consumption, required fire flow, elevation differentials and resulting residual pressure and the associated supply pipe sizes.
- d. Size, elevation and capacity of reservoirs, treatment units, pumping plants, well pumps, etc.

**5.4.4 Sanitary Sewer and Sewage Treatment Systems.** Provide any supporting information and calculations together with the following.

- a. A description of the existing system, including a discussion of the type, capacity, condition, present flow and unsatisfactory elements or component parts (with regard to expanding the sanitary sewer and treatment system).
- b. Evaluation of the degree of treatment required by the regulations governing effluent release.
- c. Calculations regarding design flow and sizing of sewer lines and treatment plant units.
- d. A description of the materials to be used for sewer systems and sewage treatment plants.

**5.4.5 Roads, Driveways, Parking Areas and Walks.** Provide a description of the general soil conditions, with a brief outline of the soil exploration and testing performed. Or, if no soil testing was performed, the A-E shall provide an explanation discussing the reasons. Also provide, as applicable, the type and volume of traffic; the controlling design wheel loads; and the calculations relating to the thickness of pavements and base courses, horizontal curves, vertical curves and super-elevation and widening of horizontal curves.

**5.4.6 Fencing.** Indicate the type, height and justification (criteria reference) for the fencing to be provided.

**5.4.7 Airfield Pavements.** Provide any supporting information and calculations together with the descriptions of the following.

- a. The soil conditions, together with an outline of the soils exploration and testing performed.
- b. The types of aircraft, wheel loading and all abnormal operating conditions.
- c. All deviations from the Naval Air Systems Command planning standards and DM-21.
- d. Design rainfall frequency and duration and the methods proposed for storm and hangar deluge system drainage.
- e. A general description of the lighting to be provided and the adequacy of existing runway and taxiway regulator capacities.

**5.4.7.1 Disposal of Water Containing Fire Fighting Foam.** Aircraft maintenance hangars must incorporate fire fighting equipment which use fire fighting foam. Acceptable disposal of any released foam includes:

- 1) disposal to a leaching pit or pond; and
- 2) if diluted to a concentration not exceeding 1:10,000, disposal to the station treatment plant.

Nonacceptable methods of foam disposal include:

- 1) discharge through hangar doors, since the released water/foam may contain floating flammables which would adversely affect fire fighting efforts; and
- 2) disposal to the ocean or any body of water, since the foam is harmful to marine life.

**5.4.8 Dust and Erosion Control.** In general, dust and erosion control shall be limited to areas actually affected by the project construction. Provide a description of the affected areas, the type of remedial treatment and all supporting information used to determine the extent of the affected area and the method of treatment or control.

## **5.5 ARCHITECTURAL**

Architecturally, the goal of the design is to allocate functional space so as to efficiently and effectively meet the operational needs of the user Activity.

**5.5.1 General.** Describe the materials proposed for the major items of construction such as the roofing system, the type of windows and doors, the type of exterior and interior wall finishes, the type of floors and/or coverings, the type of ceilings, etc.



**5.5.1.1** Roofing systems shall be in accordance with MIL-HKKB-1011/1; the latest Sheet Metal and Air Conditioning Contractors National Association, Incorporated Publication, “Architectural Sheet Metal Manual;” and NAVFACENGCOCOM Roofing Design Criteria (refer to Appendix I).

**5.5.1.2** Avoid the use of metal pan construction under shower rooms, drying areas and other “Wet Area” floors. Membrane pan construction is preferred.

**5.5.1.3** Finishes shall be described in a finish schedule.

**5.5.1.4** Interior and Exterior Color Schemes. Provide complete color selections for interior and exterior surfaces and describe the basis for the selections. Use Federal Standard 595 for colors where possible. Where not possible and for other colors or materials, use local trade standard designations.

**5.5.1.5** Vapor Barrier Placement. In conjunction with the selection of the finishes for walls, roofs, ceilings and floor, the A-E shall locate the vapor barriers to avoid moisture migration into interior spaces and to prevent condensation within walls and ceiling spaces. Provide the results of the temperature gradient/dew point analysis.

**5.5.2 Floor Layout.** Describe the floor and furniture layout plans as shown on the drawings. Discuss circulation, wall space, etc., with regard to the intended functional use of the space.

**5.5.2.1** Area Tabulation.

- a. Show the net floor area (square footage) for all identified rooms/areas.
- b. Provide the rationale for deviating from the net floor areas indicated by the project engineering documentation, Government criteria and approved concept design submittal.

**5.5.3 Downspouts.** For ease of maintenance, design downspouts that are mounted to the exterior surface of the building; avoid designing interior downspouts or leaders. If interior downspouts are the only solution, specify cast iron material.

**5.5.4 Exterior Wall Surfaces.** Avoid horizontal recesses and ledges where moisture may accumulate.

## **5.6 STRUCTURAL**

The goal is to select structural systems and materials that are suitable for the type of facility involved, capable of carrying the required loads and are compatible with the fire protection requirements, as well as the architectural and functional design concepts.

**5.6.1 Foundation Conditions.** Describe foundation conditions, the type of foundation to be used, the methodology used to determine bearing values and the maximum load bearing capacity of the foundation. Indicate the maximum dead load and live load soil capacities and the ground water level. In addition, for retaining wall design, indicate the allowable passive and active soil pressures and the coefficient of friction.

**5.6.2 Type of Construction.** Briefly describe the available systems and conduct an economic analysis to support the selection of the system chosen. Completely describe the system chosen.

**5.6.2.1 Special Features.** Describe all special or unusual features to be included in the structure which are not evident from a definitive drawing.

**5.6.3 Structural Floor and Roof System.** Describe the structural floor and roof systems proposed. Provide length and spacing of principal members, if different from standard building technology.

**5.6.4 Lateral Forces.** Describe the structural system proposed to resist lateral forces of the structure and interior contents (e.g., attached mechanical and electrical equipment, interior walls, etc). Indicate the seismic zone and wind velocity on which the design is based.

**5.6.5 Live Loads.** Identify the live load to be accommodated. Include floor and roof loads, wind and earthquake, and other special loads, as applicable, with data justifying their use.

**5.6.6 Special Considerations.** Identify all unusual or special conditions that have been accounted for in the design.

## **5.7 MECHANICAL**

**5.7.1 Heating, Ventilating and Air Conditioning (HVAC).** Design HVAC systems in accordance with MIL-HDBK-1190 and DM 3.03, unless otherwise specified by the "Scope" or by a written waiver from the Contracting Officer. Outdoor design conditions shall be in accordance with Tri-Service weather data manual, NAVFAC P-89, Engineering Weather Data.

Use life cycle costing to evaluate the various HVAC system alternatives and configurations. In the evaluation, include applicable design factors such as siting, orientation, insulation alternatives, reflective surfaces, solar shading, fenestration glazing types, natural ventilation, equipment efficiencies, etc.

A registered professional mechanical engineer shall be responsible for (i.e., supervise) the design of steam supply and condensate, high-temperature water, chilled water, gas, compressed air and fuel oil systems outside of the building or facility.

**5.7.1.1 Heating.** Indicate the indoor and outdoor design temperatures on which the design is based and include calculations of the "U" factors for building roofs, walls, ceilings and floors. Also describe the type of heating system, including the system components; the heating medium; the method of air circulation and the type of terminal unit; the type of temperature control system to be used, such as electric, pneumatic and electronic.

**5.7.1.2 Air Conditioning, Evaporative Cooling and Ventilation.** In a manner similar to heating, indicate the indoor and outdoor design conditions (temperature and relative humidity) on which the design is based and include calculations of the “U” factors for building roofs, walls, ceilings and floors. Also describe the type of cooling and ventilating system, including the air side and water/refrigerant side system components, as applicable; the cooling medium; the method of air circulation and a description of the terminal air devices.

**5.7.1.2.1 Design Calculations.** Provide a complete set of cooling load calculations in the Basis. Include with the calculations, a psychrometric chart plot of each system component containing a cooling coil. Also provide a list of manufacturers’ equipment that will satisfy the design condition requirements.

**5.7.1.2.2 Ventilation.** Identify the fresh air (outdoor air) ventilation quantities required by the specified criteria and the methods to be used to achieve the required ventilation.

**5.7.1.2.2.1 Industrial Ventilation.** Provide calculations in the format outlined in the latest edition of the American Conference of Government Industrial Hygienists Industrial Ventilation Manual.

**5.7.1.2.3 Control System.** Indicate the type of temperature control system to be used, such as electric, pneumatic and electronic. The A-E shall utilize control systems which are simple to operate, maintain and “trouble shoot.” The A-E is referred to NAVPAC Guide Specifications Sections 15971 and 15972.

**5.7.2 Plumbing.** Indicate quantities of plumbing fixtures, in accordance with occupancy allowances for Navy shore facilities. Also indicate the type of materials proposed for water pipe, soil pipe, vent stacks, etc. Use the fixture unit method to size supply and drain lines as described by the applicable plumbing code (e.g., National Standard Plumbing Code). Indicate the type (electric, gas, fuel oil, etc) and the size (storage capacity and recovery rate) of hot water heaters to be included in the project.

**5.7.2.1 Distribution Piping.** The A-E shall locate distribution piping within the building structure and conceal it whenever possible. Eliminate, or if not possible, minimize foundation wall piping penetrations.

### **5.7.3 Cold Storage Refrigeration.**

**5.7.3.1** Indicate the areas to be refrigerated; the specific use intended for each area; the design temperatures to be maintained in each space; and the outdoor design dry and wet bulb temperatures.

**5.7.3.2** Indicate the type and thickness of insulation to be applied to the walls, floor, and ceiling of the refrigerated spaces. Also describe the space conditions under which the insulation can be applied and discuss any special requirements (e.g., ventilation) that must be met with regard to safety and health of the installing personnel.

**5.7.3.3** Identify the type and capacity of the refrigeration equipment to be used.

**5.7.4 Solar Energy.** When indicated by the ‘Scope,’ describe and evaluate solar energy applications for space heating. The purpose of the evaluation is to determine the technical and economic feasibility of including a solar energy system in the project.

**5.7.5 Restriction on the Use of Ozone Depleting Substances (ODS).** Do not specify equipment or design for equipment which utilize Class I ODS. A list of the commonly used Class I ODS is as follows.

<u>Common Name</u>	<u>Chemical Name</u>
CFC-11	Trichlorofluoromethane
CFC-12	Dichlorodifluoromethane
CFC-13	Chlorotrifluoromethane
CFC-113	Trichlorotrifluoroethane
CFC-114	Dichlorotetrafluoroethane
CFC-115	Chloropentafluoroethane
R-500	CFC-12/HFC-152a Azeotrope
R502	HCFC-22/CFC-115 Azeotrope
R-503	HFC-23/CFC-13 Azeotrope
Methyl Chloroform	1,1,1-Trichloroethane
Halon 1211	Bromochlorodifluoromethane
Halon 1301	Bromotrifluoromethane
Halon 2402	Dibromotetrafluoroethane

The A-E shall certify that neither equipment utilizing Class I ODS nor Class I ODS have been specified in either the drawings or the specifications. (A sample form is provided in Appendix C). If project requirements mandate the use of Class I ODS or equipment utilizing Class I ODS (i.e., no other feasible alternative exists), the A-E shall provide to the PDE, written justification requesting approval to use Class I ODS. The PDE will then provide guidance to the A-E regarding the incorporation of Class I ODS and/or associated equipment in the project.

## **5.8 ELECTRICAL**

**5.8.1 Interior Distribution System.** Provide the following information.

- a. Electrical characteristics (phase, voltage and number of wires) of the proposed circuits and a breakdown of the estimated connection load.
- b. Lighting and convenience outlet loads.
- c. Power load for building equipment such as heating, air conditioning, elevators, etc.
- d. Loads for special operating equipment such as compressors, generators, pumps and for power receptacles being provided to energize special equipment. Apply an appropriate demand factor to each to compute the total diversified demand load.

- e. The type of wiring system, such as rigid conduit, electrical metallic tubing, nonmetallic sheathed cable, etc., and the location of each type proposed for use.
- f. The types of conductors, such as rubber insulated, varnished cambric, insulated lead covered, etc., and the location of each type proposed for use.
- g. The proposed design allowance for voltage drop and the designed lighting intensities.
- h. A description of the proposed types of lighting fixtures.
- i. The short circuit currents for all protective devices and switchgear. Select and indicate the set points and operating ranges of all protective devices and ensure that the electrical system is properly coordinated.
- j. The type and arrangement of telephone, signal, security and fire alarm systems.

**5.8.1.1** Provide an equipment ground wire for equipment circuits of 225 amperes and less. The equipment ground shall be sized in accordance with NEC Table 250-95.

**5.8.2 Exterior Distribution Systems.** Indicate the adequacy of the primary power supply at the point of connection. If the primary source is inadequate, state the proposed measures to correct the deficiency.

- a. Indicate the electrical characteristics of the power supply to the station or portion of the station involved. Indicate circuit interrupting requirements and potential voltage variations.
- b. Estimate and indicate the total connected load and the associated diversified demand load, when a group of loads is involved.
- c. Provide the rationale for selecting the proposed primary and secondary distribution voltages.
- d. Indicate the type of conductors, such as copper or aluminum and identify the corresponding locations of proposed usage.
- e. Describe the physical characteristics of the overhead and underground circuits. Indicate the proposed design allowance for voltage drop.
- f. Describe the proposed types of street lighting units and the associated lighting intensities.
- g. Describe the type and adequacy of telephone, signal and fire alarm systems, including a statement as to the number of spare telephone conductors available and spare capacity in the fire alarm circuit; also give the location of nearest fire alarm box and fire alarm circuit.

- h. Identify the short circuit currents for all protective devices and switchgear. Select and indicate the set points and operating ranges of all protection devices to ensure that the electrical system is properly coordinated.

## **5.9 ENVIRONMENTAL**

The A-E shall comply with the regulations promulgated by the Department of Defense Overseas Environmental Baseline Guidance Document (OEBGD) of October 1992.

**5.9.1 Environmental Considerations.** Explain the measures proposed for the preservation of trees, plants, wildlife, air and water; for pollution abatement; and for the blending of the project with the surroundings.

Thoroughly investigate and adhere to the provisions of the OEBGD; or to local government laws and regulations whenever the OEBGD does not provide a regulation, standard' or governing criteria. Fully describe all sensitive environmental issues which are (or may become) controversial.

The OEBGD provides guidance regarding the following:

- Air Emissions
- Drinking Water
- Wastewater
- Hazardous Materials
- Hazardous Waste
- Solid Waste
- Medical Waste Management
- Petroleum Oil Lubricants (POL)
- Noise
- Pesticides
- Historic & Cultural Resources
- Natural Resources and Endangered Species
- Polychlorinated Biphenyls
- Asbestos
- Radon
- Spill Prevention & Response Planning
- Underground Storage Tanks

**5.9.2 During Construction.** Explain the measures included in the specification to minimize the temporary disruption of the environment during construction. Include a discussion of the following.

- a. Noise from equipment and construction.
- b. Dust from the construction site, access roads, sandblasting operations, and or masonry work.

- c. Smoke from equipment.
- d. Odors from paints and other petroleum based products.
- e. Soil erosion caused by stripping operations.
- f. Clean up of wash water prior to discharge/runoff.
- g. Containment of accidental fuel, oil, paint and other petrochemical spills.
- h. Disposal of wastes.

## **5.10 FIRE PROTECTION**

Fire protection design features shall be in accordance with MIL-HDBK-1190; Facility Planning and Design Guide, MIL-HDBK-1008B, Fire Protection For Facilities Engineering, Design, and Construction; National Fire Protection Association National Fire Codes; and PACNAVFACENGCOM Code 408 policies (refer to Appendix J).

**5.10.1 Fire Protection Design Analysis.** Provide a separate fire protection design analysis, together with the Basis of Design, as indicated in the “Scope.” The analysis shall be in accordance with PACNAVFACENGCOMINST 11320.9A (refer to Appendix J).

**5.10.2 Hydraulic Calculations.** Provide hydraulic calculations for projects requiring sprinkler protection.

**5.10.3 Elevator Hoistways.** The A-E shall design for the automatic shutdown of the main power supply to elevators located in facilities equipped with automatic sprinkler protection, in accordance with NAVFAC Design Policy Letter DPL-88-00d10 of 29 Nov 1988 (refer to Appendix I).

**5.10.4 Fire Protection Features.** Discuss, as applicable, the following information shown on the drawings.

- a. Existing buildings within 100 feet of the project, including building heights and construction.
- b. Existing and proposed fire hydrants and water mains (including sizes) within 500 feet of the project. Include flow test data used to calculate residual pressure at design flow.
- c. Location and size of proposed fire sprinkler risers.
- d. Existing and proposed fire alarm boxes and circuits.
- e. Existing and proposed access roads.

**5.10.5 Fire Protection Systems.** Describe, as appropriate the type of protection included in the design.

**5.10.5.1 Automatic Sprinklers.** For sprinkling systems, indicate the type (e.g., wet, dry, deluge) of system required by criteria. The requirement shall be based upon the type of construction (i.e., height, area, exposures, etc.) and hazard classification (e.g., light, ordinary, extra hazardous).

**5.10.5.2 Special Extinguishing Method.** Discuss, as appropriate, the following: carbon dioxide, water spray and dry chemical; automatic or manual; hose stream or piped system; total flooding, local application or spot protection; automatic or manual alarm, evacuation alarm, telegraphic, radio or telephonic fire alarm notification; single zone or cross zone coverage detection system.

## **5.11 FUEL STORAGE AND DISTRIBUTION**

Design in accordance with DM-22.

**5.11.1** For projects involving the installation of gas distribution piping, provide a description of the following.

- a. The type and location of and the available pressure at the point of connection (takeoff) from the existing supply pipeline.
- b. The type of materials proposed for pipes and valves.
- c. The proposed distribution pressure. Indicate all requirements for pressure reducing stations; indicate the proposed locations.

**5.11.2 Liquid Petroleum Products.** Provide a description of the following.

- a. The type of system, including the main features of the system. Indicate the type of materials proposed for pipes, valves, tanks, etc.
- b. The unloading/receiving facilities, for tank trucks, etc.
- c. The design basis for the storage capacity, pumping rate and the number of dispensing outlets.
- d. The electrical power requirements and the source of the required power.
- e. A complete pressure drop analysis, with the calculations computed for the required/designed flow rates. 'For complicated systems, such as hydrant fueling systems, provide operating instructions and check list procedures that will allow an operator to determine whether or not the system is operating correctly.



## 5.12 ELECTRONIC SYSTEMS

**5.12.1 System Concepts.** Indicate the type and include a description of the proposed system. Identify the equipment capable of performing the desired functions, any special coordination necessary to achieve the required overall system performance and any novel proposed technique.

**5.12.2 Equipment.** Indicate the equipment to be utilized and describe the following.

- a. Government furnished equipment; identify new equipment and existing equipment to be relocated.
- b. Commercially available items.
- c. Special site or location considerations.
- d. Antenna type, separation, mounting height and method, aircraft obstruction marking, foundation and grounding.
- e. Type of transmission line; method of installation, termination, switching, etc.

**5.12.3 Basic Requirements.** Describe the basic requirements for the communication/electronic system. As a minimum, include a description of the following.

- a. Radio circuit requirements, including the number of circuits and frequencies to be used. Where radio transmission is involved, provide transmission characteristics in the format required by Commander U.S. Forces, Japan.
- b. Wiring circuits required, identifying those for voice, remote control, data transmission applications, etc.
- c. Radio frequency bonding and grounding requirements.
- d. Equipotential grounding system; lightning protection.
- e. Radio frequency shielding requirements; proposed type of shielding enclosure; filtering of circuits, etc.
- f. Proposed method of interconnecting equipment. Describe security requirements, specifically where wires/cables extend into or out of classified areas.
- g. Equipment layout, including location for racks, consoles, patch panels, distribution frames, etc.
- h. Power and lighting requirements, including emergency or no-break supply and proposed method of supply and distribution of special voltages and frequencies. Indicate demand load of electronic equipment.

- i. Air conditioning requirements for the equipment. Indicate equipment temperature and relative humidity setpoints and the tolerable operating range.
- j. For radar installations, indicate azimuth of coverage. Also indicate special precautionary measures recommended to ensure compliance with mandated levels of personnel safety, while minimizing interference with other station operations.

**5.12.4 Telecommunication, Signal, Telemetric Systems.** Describe the type and arrangement of telephone, signal, telemetry and fire alarm systems, including a statement describing the number of spare conductors available. Indicate source and connections to existing systems. Determine current local telephone utility company criteria regarding manholes, ducts, etc.

**5.12.5 Prewiring.** Identify prewiring requirements.

## **5.13 CATHODIC PROTECTION**

**5.13.1 Soils Information.** Provide results of soil:

- a. resistivity measurements;
- b. pH tests;
- c. composition tests, including normal moisture content and seasonal variations; and
- d. structure to soil electric potential measurements where protection is to be provided or where buried test specimens are provided.

**5.13.2 Other.** When cathodic protection systems are to be installed in areas known to be occupied by underground utility systems, provide the results of a cathodic interference survey on all such systems.

## **5.14 LANDSCAPING AND IRRIGATION SYSTEMS**

**5.14.1 Landscaping.** The goal is to enhance the integration of the proposed facilities with the surrounding environment. Additional constraints include: low maintenance costs; selection of plants native to the region; use of plantings to achieve functional area definition, privacy and visual screening; use of plantings to control noise, soil erosion, sunlight exposure; and use of plantings to modify wind currents.

**5.14.1.1** Indicate by sketch the configuration and type of trees, shrubs and other plantings.

**5.14.1.2** Indicate how the proposed landscaping plan will conform to the Activity's master plan for landscaping. If no master plan is available, indicate how the proposed landscaping plan is consistent with local area practices.

**5.14.1.3** Identify how the proposed landscaping plan will save existing trees and shrubs,

**5.14.1.4** Describe the maintenance procedures that will be required to upkeep the implemented landscaping plan. Indicate whether the required maintenance is within the capability of the current Activity personnel staffing.

**5.14.1.5** Describe the landscaping plan and the manner in which it enhances or reduces air conditioning loads, less desirable views and features, privacy, soil erosion and noise pollution.

**5.14.2 Irrigation Systems.** The goal of the irrigation system to apply water efficiently (i.e., achieve the highest possible plant uptake to water applied ratio) and in quantities sufficient to promote maximum plant growth.

**5.14.2.1 Requirements.** Identify irrigation requirements to sustain minimum and maximum plant growth and plant growth under varying weather conditions.

**5.14.2.2 Type.** Describe the type of irrigation system selected and indicate the water application and plant uptake rate. Indicate whether the system will be automatic or manual. If no irrigation system will be provided, provide hose connection points so that hoses and portable sprinklers may be used.

**5.14.2.3 Calculations.** Indicate the total system water requirement. Identify total number of circuits, maximum circuit size and precipitation rate of each circuit. Provide calculations regarding the residual pressure at the point of application for the designed flow rates.

**5.14.2.4 Maintenance.** Describe irrigation system dependability, durability and recommended maintenance.

## **5.15 VALUE ENGINEERING**

Value Engineering is the process in which a design is reevaluated from a functional and cost viewpoint and is conducted to assure that maximum value is obtained for the funding to be expended. Typically, a value engineering study will recommend alternate lower cost materials and construction methods (as compared with the standard materials and methods) and thereby achieve reduced project cost, without sacrificing any functional aspect of the project design.

**5.15.1** Identify and report Value Engineering recommendations to the PDE as soon in the design process as possible. Adequate lead time is required for higher command approvals of Value Engineering recommendations involving new and/or untested materials, methods and equipment. PACDIV's Value Engineering Bulletin (June 1991), which lists a number of Value Engineering ideas, is provided in Appendix K.

## **5.16 ENERGY CONSERVATION**

The goal of the Department of the Navy Energy Conservation Program is to use energy efficiently and thereby eliminate waste in the use of energy. The terms energy conservation and efficient energy use will be used interchangeably in the following paragraphs.

**5.16.1 Identify potential energy conserving design features.** Evaluate and summarize those features which have the potential to save significant quantities of energy and therefore money. The A-E is encouraged to generate creative, imaginative and innovative ideas that save energy. Use Type I life cycle economic analyses to evaluate potential conservation measures. For measures that have a large savings-to-investment ratio (SIR), notify the PDE as soon as possible in the design process so that appropriate measures can be taken to incorporate the measure into the design.

**5.16.2** When authorized, include all technically and economically feasible conservation measures into the project design and include a description of the measure and all supporting documentation in the Basis.

## **5.17 UTILITIES**

**5.17.1 General.** Describe the impact of the added project utilities loads on the Activity or Station generating and distribution systems. Specifically, discuss the following.

- a. Adequacy of the affected portions of the existing utilities systems to accommodate the added loads.
- b. For purchased power, the adequacy of the station utilities service entrance to accommodate the added load.

**5.17.2 Utility Interruptions.** Indicate the number and duration of interruptions to station utility services that will occur during construction of the designed project.

**5.17.3 Underground Utilities.** Include the results of all excavations done and tonings conducted to locate underground utilities.

## **5.18 PHYSICAL SECURITY**

The type of facility will dictate the criteria that will be used in the design. Indicate the criteria used and identify the security requirements that have been designed into the project. With regard to equipment type, the current goal is to install uniform types of IDS components for ease of long term maintenance.

**5.18.1 Types of Facilities.** Some of the facilities with a requirement for physical security are as follows.

- a. Armories
- b. Arm Rooms
- c. Weapons and Explosives Storage Facilities
- d. Ready Service Lockers
- e. Terminal Equipment Buildings
- f. Communications Buildings

- g. Sensitive Compartmented Information Facilities (SCIF)
- h. Medical Facilities
- i. Flight Lines
- j. Waterfront Facilities

**5.18.2 Intrusion Detection Systems (IDS).** Describe the design of the conduit system, electrical power and monitor station supporting the IDS system. Include a description of the facility support requirements for the IDS system, as provided by NEEACT.

## **5.19 ENGINE GENERATORS**

Design of engine generators shall conform to the requirement of MIL-HDBK-1003/11 and applicable NAVFAC Guide Specifications.

Identify the technical specifications regarding generator capacity, output voltage, current, power factor, engine fuel requirements, engine speed (rpm), output power, etc. Provide a list of commercially available engine-generator sets that meet the project requirements and include the performance requirements for each engine generator.

Identify local government or applicable U.S. EPA air quality/pollution requirements and engine generator emissions requirements. Discuss methods of compliance with these regulations; or the provision under which exemption from the regulations is claimed.

## **5.20 HAZARDOUS MATERIALS**

Indicate whether hazardous materials such as PCB, asbestos, lead paint and silica sand will or may be encountered during construction of the project. Identify all governing regulations and the methods to be used to comply with the cited regulations.

## **5.21 OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)**

Identify areas where compliance with OSHA, Public Law 91-596, or other referenced criteria is required. Describe the appropriate project related safety/health requirements and the manner in which the proposed design fulfills the identified requirement.

## **5.22 DESIGN FOR THE PHYSICALLY HANDICAPPED**

In 1976, Public Law 94-541, Title II, mandated that certain facilities financed with Federal funds be designed for accessibility and use by the physically handicapped. When indicated in the "Scope," identify the design features that have been included to satisfy this requirement.

## **SECTION 6. SOILS INVESTIGATION, FIELD SURVEY, COLOR RENDERINGS AND INTERIOR DESIGN SERVICES**

### **6.1 GENERAL**

Engineering studies and miscellaneous engineering services contracts cover a wide range of technical disciplines. General requirements for these contracts are usually the same as for design services contracts. Various NAVFAC design manuals, military handbooks, publications and instructions provide the necessary guidance. The specific publications, the extent of services required, schedule of submittals, etc., will normally be contained in the "Scope." The A-E shall conduct the engineering services, requested in conjunction with the project design, as described in the following paragraphs. The A-E shall include, in the Basis, information obtained while (or derived from) performing the Engineering Services conducted, Include, as applicable, the following:

### **6.2 SOIL MECHANICS AND SITE SEISMICITY**

Provide data/information regarding all surface and subsurface soil conditions for the project site. Evaluate the data and provide recommendations regarding foundation designs available for use in the project. When earthwork is expected to be a major item of cost in the project, the soils investigation report shall also indicate unit cost (and overall cost) information relating to the proposed earthwork to be accomplished. The general requirements for soils mechanics are described in NAVFAC Design Manuals, DM-5, DM-7 and DM-21 or the latest Military Handbooks regarding this subject.

**6.2.1 Subsurface Investigation.** Conduct soil testing in accordance with standard ASTM methods. Prior to conducting any subsurface investigation, review all soils investigation reports previously prepared for (other) projects in the general location of the project. In determining boring locations, consider factors such as: area geology; historical information regarding seismic activity; area precipitation characteristics; available soil surface, subsurface bedrock and ground water information; surface drainage patterns; historical record of subsidence and upheaval; and potential requirements for slope stabilization. Whenever possible, perform at least one (1) soil boring within the "footprint" of the project structure.

The A-E shall ensure that the quantity and depth of the borings to be performed are sufficient to allow selection of an appropriate foundation system for the structure to be designed.

**6.2.1.1 Boring Records.** Maintain a complete record of each hole. Include the following information.

- a. Information to identify the boring sample, such as the project title, A-E contract number, the date on which the boring was conducted, the name of the company conducting the boring, etc.
- b. A complete driving record for the casing and sampler that indicates the number of blows per foot (or the fraction of a foot penetration per blow); the weight and height of fall of the hammer used for driving the casing; the weight and height of fall of the

hammer used to drive the sample; the size of casing used; and the manufacturer, model and size of the sampler used for both undisturbed and disturbed samples. Prepare boring logs in accordance with the sample contained in Appendix L.

- c. Include the ground elevation of the sample referenced to an established datum.
- d. Describe the character of the materials encountered (i.e., classification by visual inspection and an indication of the firmness in place) and the elevations at which the materials were encountered.
- e. Indicate elevation at which ground water was first encountered; the elevation of the ground water after water level stabilization; and all unusual ground water conditions.
- f. Be alert for any evidence of possible chemical contamination on the site. As a minimum, conduct field evaluation of each boring sample with equipment capable of detecting the presence of petroleum products.

If conditions are discovered which indicate a need for additional soils testing, verbally notify the PDE and recommend, in writing, such additional sampling, tests or studies that are required to ensure technical adequacy and statistical reliability of the soils data obtained.

After completion of the borings, backfill the holes and restore the ground surface, including any paved surfaces to the original condition, immediately, unless monitoring of water levels is required.

**6.2.1.2 Report.** Prepare a technical report, including the results of the soils boring and testing work; details of the comprehensive analyses performed, together with all supporting information; and foundation recommendations. The report shall include the following:

- a. A map showing the location of each boring as related to all of the following: the “footprint” of the proposed structure; the latitudinal and longitudinal coordinates; existing structures in the vicinity of the borings; and other landmark features which are readily identifiable on Activity maps.
- b. A record of each hole in graphical form and the associated tabulated results of the test samples taken. Present the test results in the format recommended by the standardized ASTM testing procedure.
- c. A clear identification of the soils classification and testing system used by the testing laboratory.
- d. Graphs, formulas, references, supporting calculations and other information that a reviewer will need to completely understand the analysis presented.
- e. Discussions regarding: the potential for deformation (e.g., soil upheaval and/or subsidence); slope stabilities; the degree of consolidation (settlement) anticipated; and other related concerns.

- f. A list of the various alternative foundation systems available for use in the project.
- g. An evaluation of the various foundation systems available and identification of the most suitable (i.e., recommended) foundation system, together with an economic analysis or other information which supports the recommendation.
- h. Identification of necessary design parameters and critical items for construction.

**6.2.2 Soil Testing and Earthwork Standards.** Conduct soil testing in accordance with standard ASTM methods or other approved procedures and as a minimum, include the number of data points recommended by these standards. Present test results in a manner recommended by the standard and clearly indicate the standard procedure used by the testing laboratory. Compaction requirements shall be based on ASTM D1557 - Method B, C, or D.

**6.2.3 Foundation Design Recommendations.** After a thorough evaluation of the alternative foundation systems, the A-E shall recommend selection of the most practical and economical foundation system for the proposed structure. The recommendations shall be submitted by a registered Civil Engineer with geotechnical engineering experience.

**6.2.4 Ground Motion Criteria.** To properly design certain types of structures such as hospitals, the designing A-E will need ground motion information for the site. The following procedures are intended to promote a more uniform approach for determining ground motion and not intended to limit the methodology considered by the A-E.

**6.2.4.1 Procedures.** Follow the procedures published by the Structural Engineers Association of California on 21 April 1979 entitled "Suggested Procedures for Developing Seismic Ground Motions," unless directed otherwise.

- a. In general, analyze the dynamic characteristics of the structure to determine the distribution of lateral forces in the structure. The A-E shall carefully analyze the effects of concentrated stresses in irregular structures with: 1) highly unsymmetric floor plans; 2) large differences in stiffness values of adjacent stories; or 3) other unusual structural features. See NAVFAC P-355, P-355.1 and P-355.2 for more details.
- b. When a dynamic analysis is required, the geotechnical consultant shall determine the extent of ground motion for the site. The designing A-E shall utilize this information in the structural design of the project. A highly coordinated effort by the (A-E) structural engineer and the geotechnical consultant is essential to achieving the stated design objectives.

**6.2.5 Geochemical Evaluation.** Certain sites have a history of industrial use and the likelihood for chemical contamination of the site is great. In these situations, the A-E shall conduct an in-depth geochemical evaluation of the site, in accordance with standard EPA sampling and testing procedures. The sampling and testing procedure will generally require adherence to



special precautions with regard to personnel safety and sample handling. The A-E will not be allowed to begin the field effort until the Contracting Officer has approved the A-E health and safety plan.

**6.2.6 Geotechnical Investigation.** Required for all projects which result in the imposition of loads upon the surface of the earth. General guidance regarding the extent of field effort and laboratory tests required for various types of projects is contained in DM-7.1. Accomplish geotechnical work under the supervision of a professional geotechnical engineer who has experience in “responsible charge.” A professional geotechnical engineer with “responsible charge” is defined as a registered professional civil engineer (or registered professional geotechnical engineer with the State of California or governmental jurisdictions that specifically register geotechnical engineers) with at least 8 years of experience in geotechnical engineering. The geotechnical portions of the project drawings and specifications shall be reviewed by the geotechnical engineer to ensure geotechnical issues are adequately addressed.

**6.2.6.1 Inspection.** For structures, the geotechnical consultant shall make at least one field inspection during the construction of the building foundation.

### **6.3 SURVEYS**

The Government will furnish information regarding the existing horizontal and vertical (horizontal control monuments and benchmarks) of the Activity. Tie into these control systems the location and elevations of all major project structures, pavements, and other features. Where the project location is remote from the Activity control monuments, utilize assumed local base lines or benchmarks as approved by the Contracting Officer. The plans and specifications shall require the construction contractor to provide permanent standard NAVY monuments in these areas and supplemental monuments in other areas.

**6.3.1 Field Surveys.** Consist generally of topographic site surveys, alignment surveys, profiles and cross-sections. Site surveys shall be conducted in sufficient detail to allow the establishment of finish grades and show all existing structures, pavements, utility lines, obstructions, etc., within the limits of work. To complete the survey, the A-E shall obtain information concerning: drainage areas; connections to existing roads; size of existing utilities; and data required to connect new utilities to the nearest source of adequate supply.

**6.3.2 Topographic Surveys.** Used to site the project, provide information relating to the development of the project site and establish property lines. Such surveys are also used to establish metes and bounds for legal descriptions of real estate holdings and easements. The A-E shall set a sufficient number of semi-permanent survey points which will serve as the initial horizontal and vertical survey control for the construction of the project. (The A-E shall ensure that these horizontal control points, benchmarks and the reference datum are clearly identified and described on the drawings.)

**6.3.3 Maps and Survey Data.** All maps or other survey data furnished by the Government are for the convenience of the A-E. The A-E shall field check and verify the data to ensure that all survey information used in the preparation of plans and specifications are accurate and complete.

## **6.4 FIELD INVESTIGATIONS**

Field investigations are conducted to obtain the field data necessary to properly accomplish the design services requested under the A-E contract. The A-E shall investigate and evaluate the adequacy and characteristics of all existing systems including utility systems (water, gas, electrical, storm and sanitary sewer system, steam, fire alarm, etc.) with respect to interfacing the project requirements with the existing systems. Verify, by on-site investigation, all pertinent information of record relative to the existing conditions at the site of construction. Ensure that all new work will fit into existing spaces without obstruction. Identify all existing underground obstructions or unusual conditions in the plans and specifications.

## **6.5 COLOR RENDERINGS**

Color renderings shall depict the facility in the most advantageous view for clarity (normally a three-quarter bird's eye view). Color renderings shall have the matted overall dimensions of 27 x 40 inches for major facilities and multiple building projects and 20 x 30 inches for typical single building projects. The A-E shall mount the rendering under glare reducing acrylic plastic in a sturdy one inch minimum flat top black metal or wood frame with dimensions of 28 x 41 inches for major facilities and multiple buildings projects and 21 x 31 inches for typical single building projects. Together with the requested number of renderings, the A-E shall also provide two 8 x 10 inch black and white photographs; one 4 x 5 inch color negative; one 16 x 20 inch ektachrome print; and one 2 x 2 inch color slide of the rendering, as appropriately indicated in the "Scope." Submit a perspective sketch of the proposed rendering to the PDE for approval before starting work on the final rendering.

## **6.6 INTERIOR DESIGN SERVICES FOR FURNITURE AND FURNISHINGS PROCUREMENT**

NAVFAC Interior Design Program objectives, criteria and philosophy are set forth in DM-14.01 "Interior Design." Additionally PACNAVFACENGCOMINST 11010.12A provides guidance regarding the preparation of Collateral Equipment "Buy Packages." Prior to the initiation of any work, discuss with the PDE the schedule of submittals and the details of the procurement materials to be submitted.

**6.6.1 Scope of Work.** Interior design services include the following.

- a. Evaluating, selecting and specifying interior building colors, finishes and furnishings.
- b. Preparing renderings and other visual aid materials that will allow user Activity personnel to make decisions regarding the proposed interior design concept.
- c. Designing or consulting on the design of built-in furniture.
- d. Preparing furniture placement plans. The room plans shall be shown on 24 x 36 inch sheets, utilizing scales not less than 1/8" = 1' - 0". Submit the original or a reproducible copy with the completed final interior design package.

- e. Preparing the furniture, furnishings and collateral equipment procurement “Buy Package” that includes a cover sheet, a cost summary of the items to be procured (“Buy List”), suppliers summary sheets (“Bill of Materials”) and furniture/furnishing/equipment specification (supporting data) sheets. Since the latter two (2) documents are used, as submitted by the A-E, to actually procure the items identified, the Bill of Materials and supporting data sheets must and shall provide every detail needed by the ordering organization to correctly identify the desired item. Therefore, the A-E shall indicate stock numbers, descriptions, quantities, prices, colors, finishes, fabrics, etc., for each item on the Buy List. In addition, the cost summary shall include and separately identify delivery costs to the job site or other location indicated in the “Scope.”

In selecting furniture/furnishings/equipment, select items such that delivery and installation can be reasonably accomplished prior to the beneficial occupancy date (BOD) indicated in the “Scope.”

- f. In response to changes in requirements, updating and making appropriate substitutions at the time of purchase. Providing advisory services, as requested, due to requirement changes.
- g. Approving shop drawings and samples submitted by suppliers.
- h. Supervising the installation and placement of furniture and furnishings.
- i. Conducting special presentations as indicated in the “Scope.”

**6.6.2 Mandatory Procurement Sources.** The Government has restrictive requirements for selection of furniture, furnishings and other collateral equipment and must generally purchase items from mandatory sources. OICC FE Code 04 (PWC Code 400) will provide information on mandatory procurement sources and other required information. Items not purchased from mandatory sources will be purchased on the open market via bids from jobbers. In either case, it is imperative that the A-E provide a complete description of the desired collateral equipment, including all of the general and unique characteristics. In these situations, proprietary names can only be used for descriptive purposes. Obtain approval from the Contracting Officer (via the PDE) prior to inserting proprietary names.

The preparer of the final collateral equipment buy package must fully justify the procurement of other than the lowest cost items which will satisfy the end user’s requirements. The justification must include information relating to the specific user and activity mission requirements and program objectives.

## **SECTION 7. PROJECT DRAWINGS**

### **7.1 GENERAL**

The basic criteria for the preparation of drawings are contained in MIL-HDBK-1006/1, "Policy and Procedures for Construction Drawings and Specification Preparation."

### **7.2 CONCEPT DESIGN**

The concept design drawings shall include all user requirements; and site plans, floor plans, cross sections and elevations that fully depict the overall concept of the design. Together with the concept drawings, the A-E shall submit a report describing the design concept and designer's intent. The concept design shall be presented to the Contracting Officer and must be approved before the A-E will be authorized to further proceed with the design. In preparing the concept design, the A-E shall not deviate from the project scope without written authorization by the Contracting Officer.

The A-E shall submit a concept design which contains the following, as appropriately indicated in the "Scope."

#### **7.2.1 Site Plan(s).** Plans shall show the following:

- a. Pertinent boundaries, including footprints of existing buildings/structures on or adjacent to the project site.
- b. Outline of existing buildings and proposed new buildings. The report shall describe the functional relationship among the identified buildings.
- c. Outline of vehicle parking and sidewalks for the project. The report shall discuss parking access, the number of vehicles that can be accommodated and the anticipated traffic flow pattern.
- d. Existing roads, sidewalks and parking; existing utility lines, including water, sanitary sewer, storm drain, gas, steam, hot and chilled water, fuel, electric, etc.; and the points of connection for each utility appropriate to the project.
- e. Overall dimensions and dimensions of critical importance which require Government review and concurrence. The report shall identify the various available alternatives and provide the advantages and disadvantages of each alternative.
- f. Existing topographic features; identify site elements or factors which will have a significant cost impact on the project. In the report, identify and describe proposed site modifications.
- g. Trees to be removed; indicate the type and size.
- h. North arrow and graphic scales.

**7.2.2 Floor Plans and Elevations.** Shall contain the following:

- a. Room or space designations and associated floor area.
- b. Location of all columns; built-in equipment, doors, windows; door and window swings; and all pertinent dimensions.
- c. Identification of male and female toilets and the number of fixtures in each.
- d. Elevations showing locations of doors, windows and other fenestrations or openings.
- e. North arrow, graphic scales, pertinent notes and dimensions.

**7.3 PROJECT DRAWINGS, 35% SUBMITTAL**

The 35% drawings shall be the final construction contract drawings developed to approximately the 35% stage of completion. The drawings shall be sufficiently complete to delineate the work to be performed in constructing the project. All of the drawings shall be developed to the same level of completion so that the entire project can be reviewed for conformance with the authorized scope and DoD and Navy design criteria. The 35% submittal drawings shall include the following.

**7.3.1 Civil**

**7.3.1.1 Vicinity Map.** Shows the general location of the project; major highways and local roads in the area surrounding and leading to the project site; significant landmarks near the project site; and the names and locations of towns and cities in the area around the project site. Clarity and legibility of the vicinity map cannot be overemphasized. The logistics for project site access from, and the transportation of construction material and heavy equipment over local roads is a major construction contractor concern (and may also be a major design concern regarding selection of materials).

**7.3.1.2 Site Plan.** Based upon a fully completed field survey and containing the following:

- a. Clear footprints of all existing and proposed structures, access roads, parking topography, survey control points, bench marks, drainage patterns, roads and sidewalks. In addition, the drawings shall show:
  - 1) the locations and sizes of water, sewer, storm drain, gas, steam, fuel, **hot** and chilled water, compressed air, electricity, etc., lines; and
  - 2) the points of connection where the project utility lines will tie into existing utility lines.
- b. Existing topographic features affecting or in the vicinity of the proposed work. The drawings shall also indicate the proposed topographic modifications, including roads,

drainage facilities, etc. Where drainage facilities are to be provided, the A-E shall indicate the direction of flow and the point of discharge by appropriate symbols or notes.

Topographic data must extend sufficiently beyond the limits of the new construction to demonstrate that the designed drainage is adequate.

- c. The location, dimension and capacities of proposed parking areas, access roads, driveways, walks, etc.
- d. Boring plans and logs.

#### **7.3.1.3 Elevations/Cross Sections/Profiles.**

- a. Where earthwork cuts and fills are involved and are to be shown by cross sections, submit at least one drawing that is representative (i.e., a typical example) of the method of presentation to be used on all other drawings.
- b. Provide plan views and profiles that are used to show the locations of all below grade piping; elevations of manholes and lift stations; connection points for utilities; known obstructions.

### **7.3.2 Architectural.**

#### **7.3.2.1 Plan.**

- a. Provide plan views that show the complete floor layout, including room/space designations and numbers; all major and critical dimensions; all structural columns and beams; and all built-in equipment and furniture.
- b. Include a listing of all rooms/spaces and the corresponding net floor areas. Clearly identify the area designations for which net floor areas are limited by criteria; indicate the maximum net floor area allowed by criteria.
- c. Indicate the proposed furniture layout. Ensure that the proposed layouts will accommodate the intended use of the various spaces. Where building design requires the use of special design furniture/furnishings, provide schematic details illustrating the nature and extent of the specialty items.
- d. Identify fire rated walls and partitions with cross hatching, shading or some other graphic representation. Include an appropriate legend.

#### **7.3.2.2 Elevations.**

- a. Provide exterior elevations that show all building openings, exterior building finishes, the interior finished floor elevation, and the exterior finished grade elevations.

- b. Provide interior elevations that indicate type and extent of finishes and shows the elevation views of equipment, built-in furniture, etc.
- c. Identify fire rated ceilings and enclosures with cross hatching, shading or some other graphic representation. Include an appropriate legend.

**7.3.2.3** Building sections that show the relationship between the various building levels; floor-to-floor heights, typical wall sections; floor and roof framing; details of any unusual or non-standard building component.

**7.3.2.4** A Finish Schedule showing proposed finishes.

**7.3.2.5** Area Tabulation. Provide a table showing the gross area by floors and the total gross building area. Also provide a table showing the net floor areas by room designation and number.

**7.3.2.6** Preliminary Furniture/Equipment Layout. Ensure that adequate wall space, circulation space, etc., are provided to accommodate the intended use of the designated space. Where building design will dictate special design furniture, provide schematic details sufficient to define the nature and extent of the specialty item. If the furniture/equipment is to be procured as collateral equipment, identify the item(s) as “Government Furnished, Government or Contractor Installed,” as appropriate.

**7.3.2.7** Miscellaneous. Do not embed aluminum conduit, pipe, bars, anchors, flashing or other aluminum items in concrete.

**7.3.3 Structural.** Provide the following:

- a. Roof framing plan.
- b. Floor framing plan.
- c. Foundation layout plan.
- d. Type of structural system and kind of materials to be used.
- e. Design notes, including, but not limited to, live load, wind load, seismic load, etc., and allowable soil pressures, pile/caisson bid lengths and capacities. Indicate whether the loads are uniform or concentrated (e.g., wheel load).
- f. Earthquake zone and K, I and C values of the designed building.
- g. If, applicable, for explosives safety, identify the threat and indicate the safe distance.

### **7.3.4 Mechanical.**

**7.3.4.1 Equipment.** Describe and locate all mechanical equipment, including boilers, heaters, air conditioning equipment, compressors, generators, hoists, cranes, etc. Provide 1/4" (or larger) = 1'-0" scale plans and sections of equipment rooms showing layouts and cross sections of equipment, ductwork, piping, etc. Provide adequate space around any installed equipment to allow for ease of maintenance and overhaul (e.g. removal of tubes from boilers, air conditioning equipment, other heat exchangers).

**7.3.4.2 Systems.** Provide the following:

- a. Layout of HVAC ductwork and piping. Ductwork shall be shown double line. Indicate on the plan or in appropriate schedules the design air and water flows at each terminal device.
- b. Plumbing fixture plan and isometric and riser diagrams.
- c. System schematic and "ladder" control diagrams for mechanical systems.
- d. Routing and size of distribution system components.
- e. Layout of fire protection system.

### **7.3.5 Electrical**

**7.3.5.1 Power Source.** Provide a one-line power diagram for proposed power sources.

**7.3.5.2 Connection Point.** Identify connection points for power, telephone, cable television, etc.

**7.3.5.3 Equipment.** Show location, size and capacities of transformers.

**7.3.5.4 Reflected Ceiling Plan.** Show locations of all lighting fixtures.

**7.3.5.5 Plans for telephone, fire protection, intrusion detection system (IDS), etc.**

## **7.4 PREFINAL (100%) DRAWINGS**

Pre-Final drawings shall be complete, with all elements thoroughly checked and coordinated, and shall be clear enough for a contractor to prepare a realistic bid estimate. A Pre-Final submittal falling into one of the following categories will be returned to the A-E as unacceptable.

- a. Submission of a nearly complete set of drawings, with the intention to complete the drawings during the Government review period.



- b. Submission of an unchecked set of drawings. Checking is an A-E responsibility and must be done prior to the submission, Common discrepancies are:
- 1) incomplete or incorrect numbering of drawings;
  - 2) missing professional registration stamps;
  - 3) missing essential cross-referencing targets;
  - 4) incomplete or missing details which were referenced on other drawings;
  - 5) discrepancies or absence of coordination between disciplines;
  - 6) inconsistent dimensioning (on different sheets) for the same item of construction;
  - 7) illegible dimensions, notes and/or details.

The Pre-Final (100%) drawings shall include the following:

**7.4.1 Complete horizontal and vertical survey control.** Identifiable on the ground with sufficient ties to the new construction to permit stake out. Except for small projects, provide a minimum of two (2) bench marks. These bench marks shall be located so that their elevations will not be affected by the construction of the project. The drawings shall show bench mark descriptions, elevations and datum. Do not use assumed data.

**7.4.2 Profiles.** In addition to profiles normally required for roads, runways, taxiways and gravity pipelines, show profiles for pressure pipelines where interference with other subsurface utilities will be encountered during the construction. Show profiles for water mains 100 millimeters (i.e., JIS 100A) and larger.

**7.4.3 Loading.** Indicate roof and floor live load (uniform or other concentrated live loads) and wind velocity. Also indicate earthquake zone and K, I and C values of the building designed. Indicate design wheel loading for airfield pavements.

**7.4.4 Basic Working Stresses.** Indicate classes of concrete,  $F_c$  values, and locations where different classes of concrete are to be used. Show location of reinforcing steel and structural steel. Also indicate size and strength of the reinforcing and structural steel.

**7.4.5 Foundations.** Indicate the design soil pressure for footings and design values for piles.

**7.4.6 Fallout Shelter Information.** Include on the first drawing for fallout shelters the following information.

- a. Each designated fallout shelter area is clearly identified and meets or exceeds the current requirements as established by the Defense Civil Preparedness Agency, Washington, D.C.

Shelter Area No.                      Protection Factor                      Capacity (No. of People)  
(Tabulate each shelter area on drawings. Shelter areas should be crosshatched or otherwise designated on the architectural drawings.)

- b. Date.
- c. Department of Defense certificate serial number.
- d. Name of certificate holder (printed).
- e. Signature of certificate holder.

## **7.5 FINAL DRAWINGS**

Final drawings shall be complete with Pre-Final (100%) Government review comments incorporated.

## **7.6 DRAWING SHEETS**

Prepare drawings on 34 x 22 (D-Size) standard tracing sheets unless directed otherwise by the Contracting Officer. Refer to Appendix N for an example of a standard drawing sheet, title block and sample revision block.

## **7.7 LETTERING**

Use uppercase lettering. Vertical lettering is preferred. Lettering shall be plain, free of adornment and shall be clearly legible. The minimum size lettering on project drawings shall be 4 mm high. Since the drawings are reproduced half-size for bidding purposes, lettering less than 4 mm high is difficult to read following reduction.

## **7.8 SCALES**

**7.8.1 Uniformity.** Utilize scales large enough to clearly show all details when the drawings are reduced to half-size. Also utilize scales that will allow a viewer of the reduced drawings to clearly differentiate new work from existing conditions. For civil work, when in doubt, the A-E shall request PDE assistance in determining the appropriate scales to be used. For different details of the same or similar type of work, utilize the same scale. To maintain the same scale, if it is necessary to do so, divide the plan of large buildings into two or more sheets and provide appropriate key plans and match lines.

**7.8.2 Graphic Scales.** Refer to Appendix O for architectural, engineering and metric types of graphic scales; the scales shown in these examples are not to scale. Provide drawings with graphic scales located immediately to the left of the title block, with the words, "Graphic Scales" directly over the scales.

### **7.8.3 English System.**

- a. Floor Plans and Elevations. 1/4 or 1/8 inch = 1 foot, except that mechanical drawings showing air conditioning ductwork and areas receiving extensive piping work shall be drawn at a scale not less than 1/4 inch per foot. Mechanical drawings

of the general floor plans shall be prepared at 1/8 inch scale with detailed areas at 1/4 inch per foot.

- b. Architectural details. 3/4, 1-1/2 or 3 inches = 1 foot.
- c. Molding Sections and Similar Details. Full or half size.
- d. Mechanical and Electrical Details. 1/2, 3/4 or 1 inch = 1 foot.
- e. Structural Details. 1/2, 3/4 or 1 inch = 1 foot (larger, if necessary).

#### **7.8.4 SI (Metric) System.**

- a. Floor Plans, Elevations, Sections of Large Structures. Use 1:100 scale.
- b. Floor Plans, Elevations, Sections of Small Structures. Use 1:40 or 1:50 scale.
- c. For Enlarged Plans and Sections. Use 1:10 or 1:20 scale.

#### **7.8.5 Plot Plans and General Layouts.** Scales shall be as follows.

- a. Plot or layout plan, use 1 inch = 10, 20, 40, 60, 100 or 200 feet.
- b. Location plan, use 1 inch = 40, 60, 100 or 200 feet.
- c. Utility plans, use 1 inch = 20, 30 or 40 feet.
- d. Cross sections and profiles, use exaggerated scales to show conditions.

#### **7.8.6 Maps and Surveys.** Scales shall be as follows.

- a. General, use 1 inch = 100, 200 or 500 feet.
- b. Site planning, use 1 inch = 200 feet.
- c. Detailed design, use 1 inch = 20 or 40 feet.

### **7.9 MISCELLANEOUS**

Do not use adhesives, decals, paste-ons or stick-ons on the original drawings, unless a vellum or mylar replacement is made and is submitted as the original.

Also the use of pencil or crayon shading or poche on the back of the drawings will not reproduce satisfactorily during microfilming. Consequently, sectioned material shall be indicated by stippling, crosshatching or other pattern indication. Markings shall be on the front of the drawings.

## **7.10 NAVFAC DRAWING NUMBERS**

NAVFAC Drawing Numbers shall be obtained from the PDE or PWC Code 411, Design and Engineering Department Plan Files, when the total number of sheets in the contract has been firmly established. Generally, this is just prior to submission of the Pre-Final Submittal.

## **7.11 CONSTRUCTION CONTRACT NUMBER AND SPECIFICATION NUMBER**

The construction contract and specification numbers will be indicated in the "Scope." Do not confuse the construction contract number with the A-E contract number.

## **7.12 SHEET NUMBERS**

On the first and last drawings, show the chronological sheet number together with the total number of drawings in the set. For example, if there are a total of 127 sheets in the set of drawings, the first sheet shall be designated "Sheet 1 of 127" and the last shall be designated "Sheet 127 of 127." All other sheets shall show only the chronological sheet number (e.g., "Sheet 50 of "). The total number of sheets will be placed on all the sheets when the "as-built" drawings are prepared.

## **7.13 DESIGNATION OF TYPE OF DESIGN**

Use "A-1," "M-6," etc.; as designations for architectural, mechanical, etc., drawings, respectively. Place these designations in the "DIV. NO." block in the example title strip shown in Appendix N. Refer to MIL-HDBK-1006/1 for additional information.

## **7.14 DRAWING REVISIONS**

**7.14.1** Space for Revisions. The revision block location, size and format shall be as shown in Appendix L.

**7.14.2** Making Revisions. Revision block notations will indicate each time a change or changes have been made to the drawings. The first set of revisions shall be designated by the letter "A," subsequent sets of changes shall be designated by "B," "C," etc.

- a. Each individual revision made on the drawings shall be identified with an A1, A2, or A3, when there are three (3) revisions in the first set of revisions; B1, B2, B3, B4 or B5 when there are five (5) revisions in the second set of revisions; and so on (i.e., a capital letter followed by a numerical subscript). The entire revision shall be enclosed in a "bubble" or "cloud."
- b. In the "LTR" column of the revision block, the capital letter together with the subscript of the last revision shall be circled. In other words, if there are three (3) revisions in the first set of revisions, the drawings change shall be identified by an A3 placed in a circle.

In the “DESCRIPTION” column, list the revision subscript number and a brief explanation of the revision. List all subscript numbers and provide descriptions for all revisions.

Example. The first set of drawing changes contains seven (7) revisions. The format of the “LTR” and “DESCRIPTION” columns shall be as follows.

LTR	DESCRIPTION	DATE
A <sub>7</sub>	1, 2 Revise gutter details. 3,4,5 Revise road alignment between Stations 1 +00 and 5+00. 6,7 Add guy wires to poles.	10 May 94

### **7.15 INDEX OF DRAWINGS**

Provide an Index of Drawings on the cover/title sheet of the drawings. List the drawings according to discipline, Civil, Architectural, Structural, Mechanical and Electrical. The Civil drawings shall include information pertaining to topographic land surveys and survey control points, civil demolition, grading, drainage, paving, utilities (water, sewer, steam, electricity, etc.) mains, erosion control, landscaping and irrigation/sprinkler systems.

### **7.16 ARRANGEMENT OF DRAWINGS**

Arrange drawings in the order listed below. A cover sheet with only the title and location of the project is neither desired nor required.

- a. Title Sheet and Index of Drawings (applicable only to large projects with a substantial number of drawings).
- b. Location, Vicinity and Site Maps and Plot Plan. For projects with a small number of drawings, the project title and Index of Drawings shall be included on this sheet.
- c. Civil drawings.
- d. Landscape and irrigation (sprinkler system) drawings.
- e. Architectural drawings (including interior design).
- f. Structural drawings.
- g. Mechanical drawings.
- h. Electrical drawings.
- i. Communications drawings.

### **7.17 DELINEATION OF NEW WORK**

Use heavy and dark lines to show new work; use light lines to show existing features.

### **7.18 DELINEATION OF BID ITEMS**

Clearly define each portion of work associated with each bid item, if any.

### **7.19 PROFESSIONAL REGISTRATION STAMP**

U.S. firms doing business in Japan shall provide, on the first sheet of the drawings, the stamp and signature of a Registered Professional Engineer or Architect who is a principal of the A-E firm. In addition, the first sheet of each engineering discipline, such as Civil, Architectural, Structural, Mechanical and Electrical, shall be stamped and signed by the appropriate registered architect or engineer.

Japanese firms shall provide, on the first sheet of the drawings, the signature of a First Class Engineer or Architect who is a principal of the A-E firm. In addition, the first sheet of each engineering discipline, such as Civil, Architectural, Structural, Mechanical and Electrical shall be signed by the appropriate First Class registered Architect or Engineer.

## **SECTION 8. PROJECT CONTRACT SPECIFICATIONS**

A well-written specification will have the following characteristics.

- a. The specification will clearly and concisely specify all materials indicated on the drawings and will use terminology which is consistent with terminology indicated on the drawings.
- b. The specification will clearly define and precisely express the responsibilities of the Contractor. The specification will contain requirements which can be quantified, measured and directly verified by Government personnel.
- c. The specification will not contain (erroneous) references to materials, supplies, equipment or methods which are not included in or related to the project.
- d. The specification will also not contain vague words, phrases and expressions, such as accurate, high quality or first class workmanship; workmanship of the highest grade; good working order; . . . shall be straight and true; etc. Such words are vague, not quantifiable without further explanation and therefore unenforceable.
- e. The specification will appropriately, as well as adequately, describe the minimum needs of the Government.

Exaggerated Example.

- 1) It would not be appropriate to utilize ten (10) pages of specifications to identify the requirements for say, a concrete transformer pad.
- 2) It would not be adequate to use one (passing) paragraph to indicate the method of hazardous waste removal.

### **8.1 POLICY**

The A-E shall be fully accountable for the quality, accuracy and technical adequacy of the specifications. Project contract specifications shall clearly and concisely describe the material and workmanship requirements of the project construction contract. Specifications shall indicate essential Government needs and describe all conditions which may affect the construction of the project. In addition, specifications shall provide a mechanism for assuring the quality of workmanship and materials during construction.

Prior to preparing project specifications, the A-E specification writer and other personnel responsible for preparing the project specifications shall review and understand the contents of this manual. In addition, since guide specifications are frequently updated, the A-E is advised to contact the PDE regarding updates prior to preparation of the first specification submittal. Refer to Appendix P and Mil-Hdbk-1006/1 for more detailed instructions on the preparation of project specifications.

### 8.1.1 References

- a. MIL-HDBK-1006/1 Policy and Procedures for Project Drawing and Specification Preparation
- b. MTL-HDBK-1006/2 Policy and Procedures for Guide Specification Preparation
- c. MIL-BUL 34            Engineering and Design Criteria for Navy Facilities
- d. NAVFAC Guide        Manuscripts of Specifications (shall be edited and  
Specification            tailored to fit the project)  
(NFGS & TS series)

### 8.1.2 Submittals

**8.1.2.1** Outline Specifications (Refer to Appendix P, Section 5 for an example). Specify the items of work that will be included in the project. Arrange the specification sections in the 16 division format of the Construction Specification Institute (CSI). List all 16 divisions and, if no work is required in a particular division, include a statement, "No work in this division," under the division heading. On small projects requiring five (5) or less divisions, omit the listing of non-applicable divisions. As a minimum, outline specifications shall contain the following.

- a. **General Description.** An overall description of the project and a general summary of the items of work to be accomplished under the contract. The description/summary shall be completely self explanatory and shall not reference the drawings or any other sections of the specifications.
- b. **Project Schedule.** Identify the time required to complete the project, giving adequate consideration to the procurement of long lead time items (e.g. U.S. materials); accommodation of user Activity operating requirements and security constraints; and the mission mandated completion date.
- c. **Special Work Directives** that significantly influence cost, completion time and safety or security requirements.
- d. Unusual workmanship requirements.
- e. Contractor experience clauses.
- f. Unusual inspection/quality control requirements (e.g., nondestructive testing).

**8.1.2.2** Pre-Final (100%) Specifications. Typed with all Preliminary Submittal comments incorporated, if applicable.

The Pre-Final specification submittal shall be a copy of the final documents and shall be ready for advertisement.



**8.1.2.3** Final Specifications. Typed with all Pre-Final (100%) comments incorporated.

**8.1.2.4** Government Reviews. The Government will review the overall organization of the specification as well as the various general and technical sections. The A-E shall modify the specification in accordance with OICC FE comments or provide reasons for noncompliance. Comments by Government reviewers will in no way limit or define the A-E's responsibility for providing a proper specification.

**8.1.3 Coordination of Specifications with the Drawings.** Thoroughly and completely coordinate the specifications with the drawings to avoid inconsistencies or ambiguities between the two. Generally, the drawings shall illustrate the extent, size, shape and generic types of materials and the relationship between building components/materials. The specifications shall describe the quality of materials required; the functional installation requirements; and the method of construction.

The specification is intended to complement, but not reiterate, the drawings. The drawings allocate the material; the specification states the quality and the methods under which the material is to be employed.

Drawings shall conform to the requirements of MIL-HDBK-1006/1 and, in general, shall show the following:

- a. Location of the project on the site.
- b. Architectural and engineering design.
- c. Plans, elevations, details and all essential dimensions.
- d. The extent of various materials by appropriate symbols.
- e. Notes giving the basic design data, assumed loads, allowable stresses.
- f. Limits of work.
- g. Equipment schedules.
- h. Generic identification of equipment and materials.

Specifications shall provide information governing the following:

- a. Supplementary contractual requirements.
- b. Detailed information not shown on the drawings.
- c. Materials and workmanship.
- d. Installation requirements.

- e. Inspection and tests.
- f. Quality control for workmanship and material.

The specification writer shall review the drawings to assure that all materials and systems shown on the drawings have been included in the specifications and that all requirements to accomplish the work are adequately indicated.

In certain circumstances, a simple detail, section or note on the drawings can more clearly describe the designers' intent rather than a long, and often times, confusing specification paragraph. The A-E is encouraged to provide such information on the drawings whenever possible.

In coordinating the specification with the drawings, the A-E shall:

Avoid duplication between the drawings and specifications.

**8.1.3.1** The terminology used on the drawings shall be consistent with the terminology used in the specifications.

**8.1.3.2** Cross-reference to Drawings. Minimize use of the add-on phrases such as "as shown, as indicated, as detailed on the drawings". Such terms do not add or provide any additional information, since the drawings are already a part of the contract. If it is necessary to use one of these phrases, the A-E shall ensure that the information referenced is, in fact, on the drawings and is correctly specified.

**8.1.4** Cross-referencing within Specifications.

**8.1.4.1** To Other Sections. Minimize cross-referencing from one section to another in the specifications. Use cross-referencing only to: 1) clarify the relationship of the requirements within or between sections; and 2) avoid repetition of the same requirement in different sections.

**8.1.4.2** To Paragraphs. Minimize cross-referencing to paragraphs within the specifications. When necessary to do so, use the following wording, ". . . the paragraph entitled . . ." The A-E shall cross-reference to the paragraph number and title; the A-E shall not cross-reference to only the paragraph number or title.

**8.1.5 Unrestricted Bidding.** Specifications shall identify the minimum materials and installation requirements of the Government. Specifications shall be written to encourage maximum free competition in bidding. Therefore, the A-E shall not include unnecessarily restrictive requirements for materials or installation methods.

**8.1.6 Proprietary Specifications.** In general, it is Government policy that specifications requirements not be overly restrictive or proprietary in nature, so as to limit competition. Therefore, specifications shall be written to permit bidding by any supplier whose materials or

equipment satisfy the minimum functional technical and physical requirements of the project. Consequently, proprietary or restrictive requirements shall not be used unless it has been conclusively established that no substitute will serve the intended purpose.

“Sole source or proprietary” requirements shall be used only in situations where project requirements mandate a particular product or source and where prior approval by the (Level I) Contracting Officer has been obtained. When such a situation arises, promptly submit a request, with justification, for the Level I Contracting Officer’s approval.

When use of sole source or proprietary requirements has been approved, the specification shall identify the sole source (i.e., supplier’s, installer’s, manufacturer’s name) and material identification number (catalog number, model number, etc). Following the sole source or proprietary identification, the A-E shall include the following statement, “Notwithstanding any other provision of this contract, no other product will be accepted.” The inclusion of this statement overrides the contract clauses that permit substitution of any supposedly equal product.

**8.1.6.1** To include proprietary requirements in a construction contract, the A-E shall submit, in writing, the following information:

- a. The manufacturer/installer, model number, address of the manufacturer/installer, the installed cost of each proprietary item for the project.
- b. The total cost of the project.
- c. Justification for the proprietary requirement.
  - 1) Identify the required salient characteristics.
  - 2) Identify the laws, regulations and Navy/DoD instructions which stipulate the required salient characteristics.
  - 3) Indicate why other available products cannot be used.
  - 4) Indicate the commercial availability or non-availability of substituting products.
  - 5) Provide any additional supporting information.

NOTE: The Contracting Officer will not approve proprietary specifications for products in which overall lower life-cycle cost is the justification.

**8.1.6.2** Qualified Products (FAR 9.2). The limitations pertaining to proprietary specifications do not apply to items on a qualified products list. Typically such qualified product lists will be used by an A-E providing Interior Design Services. Refer to paragraph 6.6.2 Mandatory Procurement Sources.

**8.1.7 “Or Equal” Specification.** Specifying an item by naming an acceptable commercial product followed by the words, “or equal” is permitted when:

- 1) there are no Government specifications for the item;
- 2) the cost of the item is a minor part of the overall cost of the construction project;
- 3) the item cannot be adequately described because of the technically complicated internal composition or method of assembly.

To use the “or equal” specification, specify a minimum of three (3) manufacturers followed by the words, “or equal.” The essential features of the item shall also be indicated in sufficient detail to allow determination of the suitability of nonlisted products.

The A-E shall notify the PDE when “or equal” specification will be used.

**8.1.8 Performance Specifications,** as opposed to descriptive specifications, are used when the Government desires to give the construction contractor maximum freedom in achieving the desired end result. A typical performance specification will identify essential (end result) requirements in terms of verifiable and measurable criteria. Examples of end result requirements are fire endurance, toxicity, strength, durability and rate of system output or throughput.

In general, performance specifications, like descriptive or prescriptive specifications, will not include provisions for proprietary products or product features.

**8.1.9 Trade Names.** The A-E shall not use trade or brand names in specifying products or equipment, except in a proprietary specification, which has been approved for use by the Contracting Officer.

**8.1.10 Experience and Warranty Clauses.** The use of experience and special warranty clauses in a project specification requires approval by a Level I Contracting Officer. To obtain such approval, the A-E shall prepare the justification supporting the recommendation to include such clauses and submit the justification to the PDE.

**8.1.10.1 Experience Clauses.** When it is determined that special qualifications are required to perform the required work satisfactorily, the A-E shall include a Contractor’s experience clause. The experience clause shall state that the successful Contractor shall be a Contractor that: 1) is experienced in the particular type of work specified, 2) is of established reputation and 3) is generally recognized by the industry (that performs the type of work specified) as having the level of capability and competence required to successfully complete the project. The experience clause shall also identify the criteria to be used in ascertaining and verifying the experience qualifications of the Contractor.

The specification shall not stipulate that a Contractor must have been in business for a stated period of time; to include this provision, prior approval by the Contracting Officer is required.

**8.1.10.2 Warranty Clauses.** A quote from NAVFAC P-68, Part 46.7, is as follows, “Past experience has established that warranties increase contract costs while not significantly increasing the ability of the Government to obtain corrective action or reimbursement for obtaining corrective action from other sources than the Contractor.” Therefore, it is NAVFACENGCOM policy to not include special warranty provisions beyond the standard one year term. If, however, warranty beyond the standard one-year period contained in the contract clauses is considered vital, the A-E shall specify a longer warranty period. Do not use the word “guarantee” in place of the word “warranty.”

## **8.2 AVAILABLE SPECIFICATIONS**

NAVFACENGCOM Guide Specifications (NFGS) and other specifications and standards are listed in Military Bulletin 34, Engineering and Design Criteria for Navy Facilities. The NFGS shall be the primary basis for developing all project specifications.

**8.2.1 NFGS.** The NFGS specifications define and establish the minimum criteria for construction, materials and workmanship. The NFGS was developed for medium to large projects. The NFGS is in compact disk, read-only-memory (CD-ROM) format in the Construction Criteria (Data) Base (CCB). Subscriptions to the CCB are available from the National Institute of Building Sciences (NIBS). Refer to Appendix H.

**8.2.1.1 Tailoring.** The A-E shall edit and revise the NFGS as necessary to 1) suit the work to be accomplished under the construction contract and 2) reflect the latest proven technology, materials and construction methods. For Special Projects involving existing structures, the A-E shall also clearly and completely describe the existing conditions.

**8.2.1.2 PWC Yokosuka Guide Specifications.** At PWC Yokosuka, the NFGS has been adapted for use in Japan. The A-E shall use the Yokosuka Guide Specifications or other locally prepared specification provided by the PDE as the basis for preparing project specifications. The Yokosuka Guide Specification is also found in the CCB.

**8.2.1.3 Reference Documents.** Refer to Appendix P, Section 2 for information regarding the procurement of reference documents which are cited in the NFGS and not included in the CCB.

## **8.3 ORGANIZATION**

The specification shall be arranged in the following order.

- a. Title Page.
- b. Table of Contents.
- c. Sections in numerical order following the 16 division format of the CSI.

## **8.4 PRINT**

12-pitch letter quality print shall be utilized.

## **8.5 SPECIFICATION NUMBER**

Using the construction contract number identified in the “Scope,” the specification number is obtained by replacing the first six (6) characters (e.g., N62836) with “42”.

## **8.6 PAGE LAYOUT**

A sample of a project specification page layout is shown in Appendix P, Section 4, page 11. The sample shows the beginning, Part 1, subpart (paragraph) numbering, titles; specification and page numbers and locations; and required margins.

## **8.7 SECTION FORMAT**

**8.7.1 Division and Section Numbering and Titling.** On the first page of each each division, center the division identification (i.e., DIVISION XX) at the top of the page. Two (2) lines down, center the division title (e.g., GENERAL REQUIREMENTS, METALS, MECHANICAL).

On the first page of each section, center the section identification (i.e., SECTION XXXXX) at the top of the page or two (2) lines down from the division title, on the first page of the division. Two (2) lines below the section number, center the section title (e.g., GENERAL PARAGRAPHS, CAST-IN-PLACE-CONCRETE, STRUCTURAL STEEL, etc.).

**8.7.2 Part and Subpart Numbering.** The text of the each specification section begins with the heading, “PART 1 - GENERAL” followed by the first subpart numbered 1.1 and the subpart heading in all upper case letters. Subsequent subparts and subdivisions (also referred to as paragraphs) are consecutively numbered 1.2, 1.3, 1.4, 1.4.1, 1.4.2, 1.5, 1.5.1, 1.5.2, 1.5.2.1, 1.5.2.1.1, etc. Subsequent headings include, “PART 2 - PRODUCTS” and “PART 3 - EXECUTION.”

NOTE: The A-E shall minimize the number of subdivision levels used.

Two lines below the last paragraph of each section, include the phrase “-END OF SECTION-”.

**8.7.3 Footing and Paging.** On each page, center the section/section page number indicator approximately 5/8 inch from the bottom of the page.

**8.7.4 Section Arrangement.** Arrange each technical section in the Construction Specification Institute (CSI) three-part section format. The first part, “GENERAL,” identifies the general requirements of the work to be accomplished. The second part, “PRODUCTS,” describes the products and the quality of the materials and equipment to be included in the work to be accomplished. The third part, “EXECUTION,” provides detailed requirements regarding the performance of the work to be accomplished.

When any of the parts is not applicable, include the phrase, “Not Used” below the heading (e.g., PART 3 - EXECUTION).

## **8.8 SKETCHES**

Minimize the use of sketches in the specifications. When it is necessary to include sketches, the A-E shall provide the sketches on sheets of paper that have the same dimensions as the written specifications and shall include the sketch at the end of the appropriate section. The A-E shall identify and page number each sketch page in the manner that other specification pages are identified and numbered.

## **8.9 PRIORITY OF SPECIFICATION REFERENCES**

When using specification references (as usually found in “1.1 APPLICABLE PUBLICATIONS”), the A-E shall use the following order of priority, as established by the FAR:

- a. Commercial standards and specifications satisfactory to the functional Government requirement.
- b. Federal specifications (exclusive of military) when the functional Government requirement cannot be satisfied with commercial standards and specifications.
- c. Military specifications, when the functional Government requirement cannot be satisfied with commercial or Federal specifications.
- d. Brand name or equal.
- e. Proprietary specifications.

## **8.10 GENERAL RULES FOR SPECIFICATION REFERENCES**

Certain references are the bases for project specifications, while others are used only to prepare manuscripts or reports. Specific applications are indicated in the paragraphs below. When specification references are used, the following rules apply:

- a. List only those references which are indicated in the technical paragraphs of the specifications; do not include references not cited. List the letter or date, as appropriate, of the current edition of the reference cited. The A-E shall not use language such as, “the issue in effect on the date of the solicitation.”
- b. When a reference is cited in other than the ‘APPLICABLE PUBLICATIONS’ paragraph, the A-E shall identify the applicable portions of the reference so that the intent of the cited reference will be clearly understood.
- c. The A-E shall avoid citing specific reference paragraphs in the specifications, because doing so will limit the application of the reference to the paragraphs cited.
- d. The A-E shall avoid citing the same reference within the same specification section.

- e. When only a few of the requirements of a reference are applicable, the A-E shall state the applicable requirements in the specifications and omit the reference.

## **8.11 LANGUAGE**

Specifications must be clear, correct, complete and concise. The A-E shall adhere to the style identified in the CSI Manual of Practice on specification language. The following are examples of preferred and not preferred language.

### **8.11.1 Description of Work.**

The work includes . . .

Do not use: The work consists of. . .

**8.11.2 Imperative Mood.** Where possible, use the imperative mood as opposed to the indicative mood, passive voice.

Preferred: Cut piping and tubing to required measurements.

Not Preferred: Piping and tubing shall be cut to the required measurements.

**8.11.3 Articles.** Omit words such as, “the”, “a”, “an”.

**8.11.4 Grammar.** Subject and verb must agree in tense and number.

Correct: Bolt one elongated central fastener to panel.

Incorrect: One of the elongated central fasteners are to be placed around the eye of the panel and bolted. (One . . . is . . . , would be correct.)

**8.11.5 Strong Verbs.** Use strong verbs as opposed to weak nouns.

Preferred: Determine pump replacement costs.

Not Preferred: Provide determination of pump replacement costs.

**8.11.6 Parallel Sentence Structure.** Correct grammar requires that the nouns in a compound subject, the verbs in a compound verb, the adverbs in a compound adverbial phrase, etc., be the same in number and tense.

Correct: Perform tests to determine strength and establish quantity.

Incorrect: Perform tests to determine strength and establishing quantity.

Correct: Heating, ventilating and air conditioning . . .

Incorrect: Heating, ventilation and air conditioning . . .



**8.11.7 Prepositional Phrases.** Sentences can be shortened by using modifiers as opposed to prepositional phrases.

Preferred: Platform top . . .

Not Preferred: Top of the platform . . .

**8.11.8 Listing.** List multiple requirements rather than including the multiple requirements in a long sentence that requires extensive punctuation. Use the following format:

a. Identify first requirement;

b. Identify second requirement;

(1) Identify second requirement, first subrequirement;

(2) Identify second requirement, second subrequirement;

Continue the format shown, as required to list all requirements, subrequirement, subsubrequirements, etc.

y. Identify second to the last requirement; and

z. Identify last requirement.

When the requirements, subrequirements, etc., are complete sentences, replace each “;” with a ”.” and in the second to the last requirement delete the word, “and.”

**8.11.9 Pronouns.** Do not use pronouns. To avoid possible misinterpretation, repeat the noun.

## **8.12 PHRASEOLOGY**

**8.12.1 Division 1 General Requirements.** Specify only Contractor requirements. Technical sections shall not be used to instruct the Contracting Officer or to emphasize Division 1 requirements, which includes all of the contract clauses. Repetition of Division 1 requirements, including the contract clauses, in the technical sections may adversely affect the provisions of those requirements by inserting illegal requirements, omitting limiting conditions and establishing a precedent for overemphasizing requirement conditions.

Do not use phrases such as the following.

a. At no additional expense to the Government.

b. At the Contractor’s expense.

c. Tests and inspections shall be conducted in the presence of the Contracting Officer.

d. The Contracting Officer reserves the right.

**8.12.2 Open-ended Requirements.** Do not use openended and undefined requirement phrases, such as the following.

- a. As may be required...
- b. As necessary...
- c. An approved type . . .
- d. As directed . . .
- e. As approved . . .
- f. Subject to approval . . .
- g. Satisfactory to the Contracting Officer . . .

When such phrases are used, the potential Contractor will not know the contract requirements (that which will be required, necessary, directed, approved, or satisfactory to) and will therefore adjust his bid price accordingly. In such situations, the bid price offered by the various bidders will be related to the risk that each bidder is willing to assume.

**8.12.3 Indeterminate Words and Phrases.** Do not use indeterminate words and phrases; clearly and completely describe the requirements and include measurable characteristics or quantities whenever possible.

Do not use the phrase, “. . . unless otherwise specified,” without providing the location where it is “otherwise specified.” Other indeterminate or vague words and phrases, which are commonly used and which should be avoided, are as follows.

- a. First class workmanship
- b. Securely
- c. Thoroughly
- d. Suitable
- e. Properly
- f. Good working order
- g. Neatly
- h. Carefully
- i. Installed in a neat and workmanlike manner

j. Intended purpose

k. Etc.

**8.12.4 Limitation.** When limitation is required, use either, “not greater than” or “maximum” or “not less than” or “minimum” to express degrees of limitation.

## 8.13 VOCABULARY

**8.13.1 Misused words.** Can cause ambiguity, lead to misinterpretation and subsequently may lead to litigation. If there is any doubt, to determine proper usage, use a dictionary, preferably an unabridged dictionary or a dictionary of construction terms. Commonly misused words are as follows:

“Amount” and “Quantity”

“Any” and “All”

“And,” “Or” and “And/Or”

“Balance” and “Remainder”

“Either” and “Both”

“Flammable” and “Inflammable”

“Furnish,” “Install” and “Provide”

“Insure,” “Assure” and “Ensure”

“Shall,” “Should” and “Will”

**8.13.2 Compound Words.** Do not use compound words such as “hereinbefore” and “hereinafter.” “Herein” may be used to reference other requirements within the specifications. When using “herein,” explicitly indicate the paragraph title to which the “herein” refers to.

**8.13.3 Unfamiliar Terminology.** Do not use colloquial terms, jargon, and shipboard terms. The following are examples of words that shall not be used.

a. Do not use “bulkhead” instead use “wall”

b. Do not use “deck” instead use “floor”

c. Do not use “head” instead use “toilet”

- d. Do not use “galley” instead use “kitchen”
- e. Do not use “0800” instead use “8:00 a.m.”
- f. Do not use “1600” instead use “4:00 p.m.”

## **8.14 ELIMINATION OF WORDS**

Eliminate superfluous words such as “conforming to.” Refer to the following example.

Preferred: Aluminum paint: FS TT-P-38.

Not Preferred: Aluminum paint conforming to FS TT-P-38.

## **8.15 CAPITALIZATION, SPELLING, COMPOUND WORDS, PUNCTUATION**

Follow the conventions contained in the latest edition of the United States Government Printing Office, Style Manual.

**8.15.1 Capitalization.** Capitalize words such as, “Contractor,” Contracting Officer,” “Government” and classification terms such as, “Type,” “Grade” and “Class.” Do not capitalize (or underline) to emphasize particular words, phrases, sentences, etc. In a specification, all requirements are of equal importance in obtaining the desired products and services.

**8.15.2 Spelling.** The spelling, writing style, punctuation, etc., shall be consistent throughout the specification. For example, when multiple spellings of the same word (e.g., gauge and gage) are proper, use the spelling that is used in the cited references, if any. If no reference is cited, choose one spelling and use this spelling throughout the specification.

**8.15.3 Hyphenated Compounds.** When two or more hyphenated compounds have a common, basic element, the basic element is omitted in all but the last term and preceded by a hyphen. For example, “. . . 4- by 8-inch . . .” shall be used instead of “. . . 4-inch by S-inch . . .”

## **8.16 FOOTNOTES**

Do not use footnotes.

## **8.17 EXPONENTS, SUBSCRIPTS, SUPERSCRIPTS AND (UNITS OF MEASURE) SYMBOLS**

Do not use exponents, subscripts and superscripts. Use the written or word equivalents. Similarly, do not use symbols such as “ ’ ” for foot or feet, “ # ” for pounds, “ ° ” for degrees, etc.

## **8.18 NUMBERS**

For numbers less than 10, use the written form (e.g., five instead of 5); and for numbers between and including 10 and 999,999, use numerals to represent the numbers (e.g., “300” instead of “three hundred”).

For numbers used together with units of measurement, use numerals to represent the numbers (e.g., \$1,000.00, 8:00 a.m., 3/4 inch, 50 gallons, 0.25 millimeters, etc.).

## **8.19 PREPARATION OF SOLICITATION AMENDMENTS**

Refer to Appendix P, Section 8 for information regarding the preparation of solicitation amendments which are requested by the Government (before a construction contract is awarded).

## **8.20 PREPARATION OF CHANGE ORDER REQUEST**

Refer to Appendix P, Section 9 for information regarding the preparation of change order requests (COR) which are construction contract modifications requested by the Government (after a construction contract is awarded).

## **SECTION 9. COST ESTIMATES**

### **9.1 DEFINITIONS AND ABBREVIATIONS USED**

- 1391: (DD Form 1391) Project Documentation which provides information regarding the intended Military Construction Project.
- COR: Change Order Request.
- CWE: (Current Working Estimate) The estimate of total project costs, which includes the estimated construction cost and Government Supervision, Inspection and Overhead (SIOH) charges.
- ECC: Estimated Construction Cost.
- NAF: Non-Appropriated Funds (or Funded).
- NCF: Naval Construction Force (“SEABEES”)
- PA: Military Construction Project programmed funding amount appropriated by Congress.

### **9.2 PURPOSE OF THE COST ESTIMATE**

The basic reference for the preparation of cost estimates is Military Handbook (MIL-HDBK) 1010, “Cost Engineering: Policy and Procedures.”

The Government Estimate is designated, and should be marked, as “FOR OFFICIAL USE ONLY.” After the official bid opening, when the Government Estimate is made known to the public, the designation “FOR OFFICIAL USE ONLY” is removed. Therefore, access to the Government Estimate shall be restricted to A-E and Government personnel whose official duties require knowledge of the estimate.

The estimate provides an accurate cost assessment of the project. The objective of the estimate is to identify the fair market price to accomplish the project, under normal competitive conditions at the time of construction contract award. The Final Cost Estimate should approximate the lowest responsive bid, plus-or-minus 10%. A low bid falling outside of the plus-or-minus 10% range triggers the requirement for a bid analysis to determine the reason for the variance. If the A-E determines that the estimate needs revision, the A-E shall submit a revised estimate.

The Government uses the cost estimate in the following ways:

- a. As a standard against which the lowest responsive bid can be compared, to determine whether the bid is reasonable and acceptable to the Government.

- b. As the basis for the funds reservation request. Funds must be reserved before the construction contract can be advertised and Contractor bids received.
- c. To compare project cost with authorized funding at all stages of the design.
- d. To check cost limitations (e.g., repair, maintenance, construction) placed upon the different classifications of work.
- e. To determine the need for, and extent of, additive bid items.
- f. As a standard of comparison with the Schedule of Prices submitted by the Contractor, following award of the construction contract.
- g. As input to a cost estimating database that is used for estimating construction costs of future similar projects.

### **9.3 PREPARATION OF COST ESTIMATES**

**9.3.1 Cost Estimator Qualifications.** Cost estimates shall be prepared by qualified professional cost estimators or registered professional architects and engineers with a minimum of five (5) years of cost estimating experience.

**9.3.2 Format.** Use NAVFAC Form 11013/7. Completely and efficiently utilize all space on the form; whenever possible, do not leave blank spaces. Computer prepared cost estimates are acceptable; clearly and neatly handwritten cost estimates are also acceptable.

**9.3.2.1 Item Description.** Describe material and labor requirements in sufficient detail to enable a third party reviewer to determine the full scope of work required. The type of material, size and material quality shall be part of the description.

**9.3.2.2 Material Quantities.** The identified material quantities shall be complete and accurately reflect the quantities required by the plans and specifications. An allowance shall be included for trimming, overlap, "end of roll" excess, breakage, etc., which are generally industry accepted norms.

Use standardized units of measure recognized by the various trade groups to be involved in construction of the project.

**9.3.2.3 Unit Costs.** Unit costs for materials and equipment shall include delivery, all applicable taxes, trade and payment discounts and discounts resulting from competition among suppliers. Unit costs for labor shall include the basic labor rate plus all payroll taxes and fringe benefits. Unit costs for specialty subcontractors (e.g., for interior finishing, fire protection, public address systems, etc.) shall include subcontractor overhead and profit.

**9.3.2.4 Overhead and Profit.** The A-E shall include Contractor Overhead and Profit as a separate line item on the cost estimate summary sheet.

**9.3.2.5 Currency.** Prepare cost estimates using the local country currency (i.e., yen, Y). Convert the “bottom line” project cost (direct project cost Plus contractor overhead & profit) to dollars by using the yen/dollar exchange rate specified in the “Scope of Work” or as revised by the latest OICC FE Instruction. Refer to Appendix Q.

**9.3.3. Project Cost Limitations.** As indicated in the “Scope” and Section 2.1.1 of this Guide, the A-E shall provide a project design that is within the available funding. When it is anticipated that the ECC will exceed the available funding, the A-E shall notify the PDE and identify project alternatives that will reduce project cost. The PDE will inform the A-E regarding the project items which will be deleted or the project items for which bid items are to be prepared.

**9.3.3.1 Bid Items.** The A-E shall design the project so that the ECC is approximately 10% less than the available funding. If this is not possible, the A-E will be requested to prepare bid items such that Bid Item 1 (the base bid) is approximately 10% less than the available funding. The A-E shall not use more than three (3) bid items (base bid plus 2 additives) without approval from the PDE. Each additive bid item shall be greater than two (2) but less than eight (8) per cent of the base bid; and the combined total cost of all additive bid items shall not exceed twenty-five per cent of the base bid.

**9.3.4 Pricing.** The A-E shall use basic labor and material costs identified in local Japanese cost estimating guides. As a check, the A-E shall also verify the handbook material costs by contacting local suppliers. For U.S. materials, the A-E shall secure price quotes from Japanese trading companies.

All unit material prices shall include all applicable taxes and shall include a provision for inflation during the specified construction period.

For all major material and equipment items, the A-E shall use contractors\* costs for the proposed construction area. Use of say, Honolulu or San Francisco, prices multiplied by a Japan area factor will not be accepted.

The A-E shall include, with the Cost Estimate, all supporting information (e.g., manufacturer or supplier price quotes). As a minimum, price quotes shall contain the company name, the person contacted, the date of the quote, the length of period for which the quote is effective and the description of the material/equipment for which the quote was made. Updates and revisions to the supporting information shall be provided, as needed, to keep the project ECC current.

**9.3.4.1 Escalation** relates to the cost increases which result from material price and wage increases as time progresses (i.e., cost increases resulting from inflation). For the Final Submittal, the A-E shall provide a cost estimate that estimates the project cost at the time of bid opening. The A-E shall use escalation rates which reflect the local inflation rates.



## 9.4 SUBMITTAL REQUIREMENTS

The A-E shall submit the required number of cost estimates together with other submittal requirements, as indicated in the "Scope." The A-E shall bind the cost estimate separately from the other submittal documents and shall place the estimate in a sealed envelope.

**9.4.1 Preliminary (35%) Submittal.** The 35% estimate shall be based on a reasonably complete material take-off. For project elements which are not sufficiently designed, the A-E may utilize general unit costs such as the cost per square meter for building foundations, the cost per square meter of pavement, the average cost per electrical lighting fixture, mechanical plumbing fixture, etc.

**9.4.2 Pre-Final (100%) Submittal.** The 100% estimate shall be based on: 1) accurate and detailed quantities reflected on the drawings, 2) the quality of materials and installation indicated by the specifications and 3) current unit prices. The A-E shall prepare a brief narrative description of how the cost estimate was developed and the source of the pricing data used in the estimate. The A-E shall also identify:

- a. all items of work that have a significant impact on overall project cost;
- b. all the assumptions on which the cost estimate was based (e.g., high prices due to limited material availability, local economic conditions, size and complexity of the project, labor availability, etc.); and
- c. any other factor which provides insight to understanding the submitted cost estimate.

**9.4.3 Final Submittal.** The estimate is an updated Pre-Final Submittal Cost Estimate that incorporates all Pre-Final comments and minor revisions and adjustments. These revisions and adjustments are incorporated to reflect the expected market conditions at the time of bid preparation.

## 9.5 AMENDMENT ESTIMATES

Amendments are issued to cover changes to contract documents after the project has been advertised but before bids are opened. When an amendment has an impact on project cost, the A-E shall prepare and submit, prior to bid opening, a revised estimate together with the other amendment documents. The Revised Cost Estimate requires the same format and level of detail as the Final Cost Estimate. When an amendment has little or **no** impact on project cost, the A-E shall indicate this in the transmittal letter to the PDE.

## 9.6 CONTRACT MODIFICATION ESTIMATES

After award of a construction contract, a contract modification estimate is required before the Government negotiates the cost of the modification with the Contractor. To facilitate the negotiations, the A-E shall prepare the modification estimate in the additive/deductive format (using NAVFAC Form 4330/43) which is also followed by the Contractor.

In the modification estimate, the A-E shall:

- a. contact the ROICC to determine the work which has already been completed and to determine all future work which will be affected by the modification;
- b. determine the additive/deductive items of work and the associated cost to the Prime Contractor and all Sub-contractors to be involved in the modification, giving adequate consideration to existing site conditions and the availability of Contractor/Subcontractor labor and equipment;
- c. provide details of the modification estimate on NAVFAC Form 11013/7 and transfer the summary subtotals for each item of work to NAVFAC Form 4330/43; and
- d. use 10% for Field & Office Overhead; use 6% for profit.

### **9.7 NAVAL CONSTRUCTION FORCE (NCF) PROJECTS**

NCF projects are constructed by U.S. Navy “Seabee” personnel. The A-E shall prepare two (2) estimates. The first shall be the standard or usual estimate prepared. The second shall be an estimate that identifies the project material costs and the cost of technical-labor which will be needed to assist “Seabee” personnel in accomplishing the required work. The PDE will identify the materials which will be locally purchased and the materials which will be U.S. purchased; the PDE will also identify the type of technical labor which will be needed to assist Seabee personnel.

### **9.8 INTERNATIONAL BALANCE OF PAYMENTS (IBOP)**

The A-E shall submit an IBOP analysis for all projects designed for OICC FE. Refer to Appendix R, for detailed instructions regarding the preparation of IBOP analyses.

## **APPENDIX A: A-E CONTRACT CLAUSES**

- 1. Federal Acquisition Regulations (FAR)**
- 2. DoD FAR Supplement (DFARS)**
- 3. Miscellaneous Additional Clauses**

CONTRACT CLAUSES

ARCHITECT - ENGINEER FIXED PRICE CONTRACT  
OVER \$25,000

I. FEDERAL ACQUISITION REGULATION (FAR)

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CONTRACT CLAUSES  
(FULL TEXT)  
ARCHITECT-ENGINEER FIXED PRICE CONTRACT

I. FEDERAL ACQUISITION REGULATION CLAUSES

1. FAR 52.202-1, DEFINITIONS (SEP 1991) - Alternate I (APR 1984)

(a) "Head of the agency" (also called "agency head") or "Secretary" means the Secretary (or Attorney General, Administrator, Governor, Chairperson, or other chief official, as appropriate) of the agency, including any deputy or assistant chief official of the agency; and the term, "authorized representative" means any persons, or board (other than the Contracting Officer) authorized to act for the head of the agency or Secretary.

(b) "Contracting Officer" means a person with the authority to enter into, administer, and/or terminate contracts and make related determinations and findings, The term includes certain authorized representatives of the Contracting Officer acting within the limits of their authority as delegated by the Contracting Officer.

2. FAR 52.203-1, OFFICIALS NOT TO BENEFIT (APR 1984)

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit arising from it. However, this clause does not apply to this contract to the extent that this contract is made with a corporation for the corporation's general benefit.

3. FAR 52.203-3, GRATUITIES (APR 1984)

(a) The right of the Contractor to proceed may be terminated by written notice if, after notice and hearing, the agency head or a designee determines that the Contractor, its agent, or another representative--

(1) Offered or gave a gratuity (e.g., an entertainment or gift) to an officer, official, or employee of the Government; and

(2) Intended, by the gratuity, to obtain a contract or favorable treatment under a contract.

(b) The facts supporting this determination may be reviewed by any court having lawful jurisdiction.

(c) If this contract is terminated under paragraph (a) above, the Government is entitled--



(1) To pursue the same remedies as in a breach of the contract;  
and

(2) In addition to any other damages provided by law, to exemplary damages of not less than 3 nor more than 10 times the cost incurred by the Contractor in giving-gratuities to the person concerned, as determined by the agency head or a designee. (This subparagraph (c) (2) is applicable only if this contract uses money appropriated to the Department of Defense.)

(d) The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

4. FAR 52.203-5, COVENANT AGAINST CONTINGENT FEES (APR 1984)

(a) The Contractor warrants that no person or agency has been employed or retained to solicit or obtain this contract upon an agreement or understanding for a contingent fee, except a bona fide employee or agency. For breach or violation of this warranty, the Government shall have the right to annul this contract without liability or, in its discretion, to deduct from the contract price or consideration, or otherwise recover, the full amount of the contingent fee,

(b) "Bona fide agency," as used in this clause, means an established commercial or selling agency, maintained by a contractor for the purpose securing business, that neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts nor holds itself out as being able to obtain any Government contract or contracts through improper influence.

"Bona fide employee," as used in this clause, means a person, employed by a contractor and subject to the contractor's supervision and control as to time, place, and manner of performance, who neither exerts nor proposes to exert improper influence to solicit or obtain Government contracts nor holds out as being able to obtain any Government contract or contracts through improper influence.

"Contingent fee," as used in this clause, means any commission, percentage, brokerage, or other fee that is contingent upon the success that a person or concern has in securing a Government contract.

"Improper influence," as used in this clause, means any influence that induces or tends to induce a Government employee or officer to give consideration or to act regarding a Government contract on any basis other than the merits of the matter.

5. FAR 52.203-7, ANTI-KICKBACK PROCEDURES (OCT 1988)

(a) Definitions.

"Kickback," as used in this clause, means any money, fee,

commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided, directly or indirectly, to any prime Contractor, prime Contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a subcontract relating to a prime contract.

"Person," as used in this clause, means a corporation, partnership, business association of any kind, trust, joint-stock company, or individual.

"Prime contract," as used in this clause, means a contract or contractual action entered into by the United States for the purpose of obtaining supplies, materials, equipment, or services of any kind.

"Prime Contractor" as used in this clause, means a person who has entered into a prime contract with the United States.

"Prime Contractor employee," as used in this clause, means any officer, partner, employee, or agent of a prime Contractor.

"Subcontract," as used in this clause, means a contract or contractual action entered into by a prime Contractor or subcontractor for the purpose of obtaining supplies, materials, equipment, or services of any kind under a prime contract.

"Subcontractor," as used in this clause, (1) means any person, other than the prime contractor, who offers to furnish or furnishes any supplies, materials, equipment, or services of any kind under a prime contract or a subcontract entered into in connection with such prime contract, and (2) includes any person who offers to furnish or furnishes general supplies to the prime Contractor or a higher tier subcontractor.

"Subcontractor employee," as used in this clause., means any officer, partner, employee, or agent of a subcontractor.

(b) The Anti-Kickback Act of 1986 (41 U.S.C. 51-58) (the Act), prohibits any person from--

(1) Providing or attempting to provide or offering to provide any kickback;

(2) Soliciting, accepting, or attempting to accept any kickback;  
or

(3) Including, directly or indirectly, the amount of any kickback in the contract price charged by-a prime Contractor to the United States or in the contract price charged by a subcontractor to a prime Contractor or higher tier subcontractor.

(c) (1) The Contractor shall have in place and follow reasonable procedures designed to prevent and detect possible violations described in paragraph (b) of this clause in its own operations and direct business relationships.

(2) When the Contractor has reasonable grounds to believe that violation described in paragraph (b) of this clause may have occurred, the Contractor shall promptly report in writing the possible violation. Such reports shall be made to the inspector general of the contracting agency, the head of the contracting agency if the agency does not have an inspector general, or the Department of Justice.

(3) The Contractor shall cooperate fully with any Federal agency investigating a possible violation described in paragraph (b) of this clause.

(4) The Contracting Officer may (i) offset the amount of the kickback against any monies owed by the United States under the prime contract and/or (ii) direct that the Prime Contractor withhold from sums owed a subcontractor under the prime contract the amount of the kickback. The Contracting Officer may order that monies withheld under subdivision (c) (4) (ii) of this clause be paid over to the Government unless the Government has already offset those monies under subdivision (c) (4) (i) of this clause. In either case, the Prime Contractor shall notify the Contracting Officer when the monies are withheld.

(5) The Contractor agrees to incorporate the substance of this clause, including subparagraph (c) (5) but excepting subparagraph (c) (1), in all subcontracts under this contract.

6. FAR 52.203-9, REQUIREMENT FOR CERTIFICATE OF PROCUREMENT INTEGRITY-MODIFICATION (NOV 1990)

(a) Definitions. The definitions set forth in FAR 3.104-4 are hereby incorporated in this clause.

(b) The Contractor agrees that it will execute the certification set forth in paragraph (c) of this clause when requested by the Contracting Officer in connection with the execution of any modification of this contract.

(c) Certification. As required in paragraph (b) of this clause, the officer of employee responsible for the modification proposal shall execute the following certification:

CERTIFICATE OF PROCUREMENT INTEGRITY-MODIFICATION (NOV 1990)

(1) I, [Name of certifier] am the officer or employee responsible for the preparation of this modification proposal and hereby certify that, to the best of my knowledge and belief, with the exception of any information described in this certification, I have no information concerning a violation or possible violation of subsection 27(a), (b), (d), or (f) of the Officer of Federal Procurement Policy Act, as amended\* (41 U.S.C. 423), (hereinafter referred to as "the Act"), as implemented in the FAR, occurring during the conduct of this procurement (contract and modification number).

(2) As required by subsection 27(e) (1) (B) of the Act, I further

certify that to the best of my knowledge and belief, each officer, employee, agent, representative, and consultant of [Name of Offeror] who has participated personally and substantially in the preparation or submission of this proposal has certified that he or she is familiar with, and will comply with, the requirements of subsection 27(a) of the Act, as implemented in the FAR, and will report immediately to me any information concerning a violation or possible violation of subsections 27(a), (b), (d), or (f) of the Act, as implemented in the FAR, pertaining to this procurement.

(3) Violations or possible violations: (Continue on plain bond paper if necessary and label Certificate of Procurement Integrity-Modification (Continuation Sheet), ENTER "NONE" IF NONE EXISTS) \_\_\_\_\_

\_\_\_\_\_ [Signature of the officer or employee responsible for the modification proposal and date] \_\_\_\_\_  
[(Typed name of the officer or employee responsible for the modification proposal) \_\_\_\_\_

\*Subsections 27(a),(b), and (d) are effective on December 1, 1990.  
Subsection 27(f) is effective on June 1, 1991.

THIS CERTIFICATION CONCERNS A MATTER WITHIN THE JURISDICTION OF AN AGENCY OF THE UNITED STATES AND THE MAKING OF A FALSE, FICTITIOUS, OR FRAUDULENT CERTIFICATION MAY RENDER THE MAKER SUBJECT TO PROSECUTION UNDER TITLE 18, UNITED STATES CODE, SECTION 1001.

(End of certification)

(d) In making the certification in paragraph (2) of the certificate, the officer or employee of the competing Contractor responsible for the offer or bid, may rely upon a one-time certification from each individual required to submit a certification to the competing Contractor, supplemented by periodic training. These certifications shall be obtained at the earliest possible date after an individual required to certify begins employment or association with the contractor. If a contractor decides to rely on a certification executed prior to the suspension of section 27 (i.e., prior to December 1, 1989), the Contractor shall ensure that an individual who has so certified is notified-that section 27 has been reinstated. These certifications shall be maintained by the Contractor for a period of 6 years from the date a certifying employee's employment with the company ends or, for an agency, representative, or consultant, 6 years from the date such individual ceases to act on behalf of the contractor.

(e) The certification required by paragraph (c) of this clause is a material representation of fact upon which reliance will be placed in executing this modification.

7. 52.203-10, PRICE OR FEE ADJUSTMENT FOR ILLEGAL OR IMPROPER ACTIVITY (SEP 1990)

(a) The Government, at its election, may reduce the price of a fixed-price type contract or contract modification and the total cost and fee under a cost-type contract or contract modification by the amount of profit or fee determined as set forth in paragraph (b) of this clause if the head of the contracting activity or his or her designee determines that there was a violation of subsection 27(a) of the Office of Federal Procurement Policy Act, as amended (41 U.S.C. 423), as implemented in the FAR. In the case of a contract modification, the fee subject to reduction is the fee specified in the particular contract modification at the time of execution, except as provided in subparagraph (b) (5) of this clause--

(b) The price or fee reduction referred to in paragraph (a) of this clause shall be--

(1) For cost-plus-fixed-fee contracts, the amount of the fee specified in the contract at the time of award;

(2) For cost-plus-incentive-fee contracts, the target fee specified in the contract at the time of award, notwithstanding any minimum fee or "fee floor" specified in the contract;

(3) For cost-plus-award-fee contracts--

(i) The base fee established in the contract at the time of contract award)

(ii) If no base fee is specified in the contract, 30 percent of the amount of each award fee otherwise payable to the Contractor for each award fee evaluation period or at each award fee determination point.

(4) For fixed-price-incentive contracts, the Government may--

(i) Reduce the contract target price and contract target profit both by an amount equal to the initial target profit specified in the contract at the time of contract award; or

(ii) If an immediate-adjustment to the contract target price and contract target profit would have a significant adverse impact on the incentive price revision relationship under the contract, or adversely affect the contract financing provisions, the Contracting Officer may defer such adjustment until establishment of the total final price of the contract. The total final price established in accordance with the incentive price revision provisions of the contract shall be reduced by an amount equal to the initial target profit specified in the contract at the time of contract award and such reduced price shall be the total final contract price.

(5) For firm-fixed-price contracts or contract modifications, by 10 percent of the initial contract price; 10 percent of the contract modification price; or a profit amount determined by the Contracting Officer from records or documents in existence prior to the date of the contract award or modification.

(c) The Government may, at its election, reduce a prime contractor's

price or fee in accordance with the procedures of paragraph (b) of this clause for violations of the Act by its subcontractors by an amount not to exceed the amount of profit or fee reflected in the subcontract at the time the subcontract was first definitively priced.

(d) In addition to the remedies in paragraphs (a) and (c) of this clause, the Government may terminate this contract for default. The rights and remedies of the Government specified herein are not exclusive, and are in addition to any other rights and remedies provided by law or under this contract.

8. FAR 52.203-12, LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (JAN 1990)

(a) Definitions. "Agency," as used in this clause, means executive agency as defined in 2.101.

"Covered Federal Action," as used in this clause, means any of the following Federal actions:

(a) The awarding of any Federal contract.

(b) The making of any Federal grant.

(c) The making of any Federal loan.

(d) The entering into of any cooperative agreement.

(e) The extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

"Indian tribe" and "tribal organization," as used in this clause, have the meaning provided in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B) and include Alaskan Natives.

"Influencing or attempting to influence," as used in this clause, means making, with the intent to influence, any communication to or appearance before an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any covered Federal action.

"Local government," as used in this clause, means a unit of government in a State and, if chartered, established, or otherwise recognized by a State for the performance of a governmental duty, including a local public authority, a special district, an intrastate district, a council of governments, a sponsor group representative organization, and any other instrumentality of a local government.

"Officer or employee of an agency," as used in this clause, includes the following individuals who are employed by an agency:

(a) An individual who is appointed to a position in the Government under title 5, United States Code, including a position under a temporary

appointment.

(b) A member of the uniformed services, as defined in subsection 101(3), title 37, United States Code.

(c) A special Government employee, as defined in section 202, title 18, United States Code.

(d) An individual who is a member of a Federal advisory committee, as defined by the Federal Advisory Committee Act, title 5, United States Code, appendix 2.

"Person," as used in this clause, means an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit, or not for profit. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Reasonable compensation," as used in this clause, means, with respect to a regularly employed officer or employee of any person, compensation that is consistent with the normal compensation for such officer or employee for work that is not furnished to, not funded by, or not furnished in cooperation with the Federal Government.

"Reasonable payment," as used in this clause, means, with respect to professional and other technical services, a payment in an amount that is consistent with the amount normally paid for such services in the private sector.

"Recipient," as used in this clause, includes the Contractor and all subcontractors. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Regularly employed," as used in this clause, means, with respect to an officer or employee of a person requesting or receiving a Federal contract, an officer or employee who is employed by such person for at least 130 working days within 1 year immediately preceding the date of the submission that initiates agency consideration of such person for receipt of such contract. An officer or employee who is employed by such person for less than 130 working days within 1 year immediately preceding the date of the submission that initiates agency consideration of such person shall be considered to be regularly employed as soon as he or she is employed by such person for 130 working days.

"State," as used in this clause, means a State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, a territory or possession of the United States, an agency or instrumentality of a State, and multi-State, regional, or interstate entity having governmental duties and powers.

(b) Prohibitions.

(1) Section 1352 of title 31, United States Code, among other things, prohibits a recipient of a Federal contract, grant, loan, or cooperative agreement from using appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions; the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or the modification of any Federal contract, grant, loan, or cooperative agreement.

(2) The Act also requires Contractors to furnish a disclosure if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a Federal contract, grant, loan, or cooperative agreement.

(3) The prohibitions of the Act do not apply under the following conditions:

(i) Agency and legislative liaison by own employees.

(A) The prohibition on the use of appropriated funds, in subparagraph (b) (1) of this clause, does not apply in the case of a payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action if the payment is for agency and legislative liaison activities not directly related to a covered Federal action.

(B) For purposes of subdivision (b) (3) (i) (A) of this clause, providing any information specifically requested by an agency or Congress is permitted at any time:

(c) The following agency and legislative liaison activities are permitted at any time where they are not related to a specific solicitation for any covered-Federal action:

(1) Discussing with an agency the qualities and characteristics (including individual demonstrations) of the person's products or services, conditions or terms of sale, and service capabilities.

(2) Technical discussions and other activities regarding the application of adaptation of the person's products or services for an agency's use.

(D) The following agency and legislative liaison activities are permitted where they are prior to formal solicitation of any covered Federal action --

(1) Providing any information not specifically requested but necessary for an agency to make an informed decision about



initiation of a covered Federal action;

(2) Technical discussions regarding the preparation of an unsolicited proposal prior to its official submission; and

(3) Capability presentations by persons seeking awards from an agency pursuant to the provisions of the Small Business Act, as amended by Pub. L. 95-507, and subsequent amendments.

(E) Only those services expressly authorized by subdivision (b) (3) (i)(A) of this clause are permitted under this clause.

(ii) Professional and technical services.

(A) The prohibition on the use of appropriated funds, in subparagraph (b) (1) of this clause, does not apply in the case of--

(1) A payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action, if payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action.

(2) Any reasonable payment to a person, other than an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action if the payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed-by or pursuant to law as a condition for receiving that Federal action. Persons other than officers or employees of a person requesting or receiving a covered Federal action include consultants and trade associations.

(B) For purposes of subdivision (b)(3) (ii) (A) of this clause, "professional and technical services" shall be limited to advice and analysis directly applying any professional or technical discipline. For example, drafting of a legal document accompanying a bid or proposal by a lawyer is allowable. Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission or negotiation of a covered Federal action. Thus, for example, communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because the

lawyer is not providing professional legal services. Similarly, Communications with the intent to influence made by an engineer providing an engineering analysis prior to the preparation or submission of bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission or negotiation of a covered Federal action.

(C) Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation and any other requirements in the actual award documents.

(D) Only those services expressly authorized by subdivisions (b) (3) (ii)(A)(1) and (2) of this clause are permitted under this clause.

(E) The reporting requirements of FAR 3.803(a) shall not apply with respect to payments of reasonable compensation made to regularly employed officers or employees of a person.

(c) Disclosure.

(1) The Contractor who requests or receives from an agency a Federal contract shall file with that agency a disclosure form, OMB standard form LLL, Disclosure of Lobbying Activities, if such person has made or has agreed to make any payment using nonappropriated funds (to include profits from any covered Federal action), which would be prohibited under subparagraph (b)(1) of this clause, if paid for with appropriated funds.

(2) The Contractor shall file a disclosure form at the end of each calendar quarter in which there occurs any event that materially affects the accuracy of the information contained in any disclosure form previously filed by such person under subparagraph (c)(1) of this clause. An event that materially affects the accuracy of the information reported includes --

(i) A cumulative increase of \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

(ii) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or

(iii) A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

(3) The Contractor shall require the submittal of a certification, and if required, a disclosure form by any person who requests or receives any subcontract exceeding \$100,000 under the Federal contract.

(4) All subcontractor disclosure forms (but not certifications) shall be forwarded from tier to tier until received by the prime Contractor. The prime Contractor shall submit all disclosures to the

Contracting Officer at the end of the calendar quarter in which the disclosure form is submitted by the subcontractor. Each subcontractor certification shall be retained in the subcontract file of the awarding Contractor.

(d) Agreement. The Contractor agrees not to make any Payment prohibited by this clause.

(e) Penalties.

(1) Any person who makes an expenditure prohibited under paragraph (a) of this clause or who fails to file or amend the disclosure form to be filed or amended by paragraph (b) of this clause shall be subject to civil penalties as provided for by 31 U.S.C. 1352. imposition of a civil penalty does not prevent the Government from seeking any other remedy that may be applicable.

(2) Contractors may rely without liability on the representation made by their subcontractors in the certification and disclosure form.

(f) Cost allowability. Nothing in this clause makes allowable or reasonable any costs which would otherwise be unallowable or unreasonable. Conversely, costs made specifically unallowable by the requirements in this clause will not be made allowable under any other provision.

9. FAR 52.203-13 PROCUREMENT INTEGRITY-SERVICE CONTRACTING  
(SEP 1990)

(a) Definitions. The definitions in FAR 3.104-4 are hereby incorporated in this clause.

(b) The Contractor shall establish a procurement ethics training program for its employees serving as procurement officials. The program shall, as a minimum--

(1) Provide for the distribution of written explanations of the provisions of section 27 of the Office of Federal Procurement Policy Act, as amended (41 U.S.C. 423), as implemented in the FAR to such employees; and

(2) Require each such employee, as condition of serving as :a procurement official, to certify to the Contracting Officer that he or she is familiar with the provisions of the Act, as implemented in the FAR, and will not engage in any conduct prohibited by subsections 27(a), (b), (d), or (f) of the Act, as implemented in the FAR, and will report immediately to the Contracting Officer any information concerning a violation or possible violation of the prohibitions.

(c) Pursuant to FAR 3.104-9(d), a Contractor employee who is serving as a procurement official may be requested to execute additional certifications.

(d) If a Contractor employee serving as a procurement official ceases

performance of these duties during the conduct of such procurement expected to result in a contract or contract modification in excess of \$100,000, such employee shall certify to the Contracting Officer that he or she understands the continuing obligation, during the conduct of the agency procurement, not to disclose proprietary or source selection information related to such agency procurement.

10. FAR 52.204-2, SECURITY REQUIREMENTS (APR 1984) - ALTERNATIVE II (APR 1984)

(a) This clause applies to the extent that this contract involves access to information classified "Confidential," "Secret," or "Top Secret."

(b) The Contractor shall comply with (1) the Security Agreement (DD Form 4411, including the Department of Defense Industrial Security Manual For Safeguarding Classified Information (DoD 5220.22-M), and (2) any revisions to that manual, notice of which has been furnished to the Contractor.

(c) If, subsequent to the date of this contract, the security classification or security requirements under this contract are changed by the Government and if the changes cause an increase or decrease in security costs or otherwise affect any other term or condition of this contract, the contract shall be subject to an equitable adjustment as if the changes were directed under the Changes clause of this contract.

(d) The Contractor agrees to insert terms that conform substantially to the language of this clause, including this paragraph (d) but excluding any reference to the Changes clause of this contract, in all subcontracts under this contract that involve access to classified information.

(e) The Contractor shall be responsible for furnishing to each employee and for requiring each employee engaged on the work to display such identification as may be approved and directed by the Contracting Officer. All prescribed identification shall immediately be delivered to the Contracting Officer, for cancellation upon the release of any employee. When required by the Contracting Officer, the Contractor shall obtain and submit fingerprints of all persons employed or to be employed on the project.

11, FAR 52.209-6, PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT (NOV 1992)

(a) The Government suspends or debar Contractors to protect the Government's interests. The Contractor shall not enter into any subcontract in excess of the small purchase limitation at FAR 13.000 with a Contractor that is debarred, suspended, or proposed for debarment unless there is a compelling reason to do so.

(b) The Contractor shall require each proposed first-tier subcontractor, whose subcontract will exceed the small purchase limitation

at FAR 13.000, to disclose to the Contractor, in writing, whether as of the time of award of the subcontract, the subcontractor, or its principals, is or is not debarred, suspended, or proposed for debarment by the Federal Government.

(c) A corporate officer or a designee of the Contractor shall notify the Contracting Officer in writing, before entering into a subcontract with a party that is debarred, suspended, or proposed for debarment (see FAR 9.404 for information on the List of Parties Excluded from Procurement Programs). The notice must include the following:

(1) The name of the subcontractor.

(2) The Contractor's knowledge of the reasons for the subcontractor being on the List of Parties Excluded from Procurement Programs.

(3) The compelling reason(s) for doing business with the subcontractor notwithstanding its inclusion on the List of Parties Excluded From Procurement Programs.

(4) The systems and procedures the Contractor has established to ensure that it is fully protecting the Government's interests when dealing with such subcontractor in view of the specific basis for the party's debarment, suspension, or proposed debarment.

12. FAR 52.212.-12, SUSPENSION OF WORK (APR 1984)

(a) The Contracting Officer may order the Contractor, in writing, to suspend, delay, or interrupt all or any part of the work of this contract for the period of time that the Contracting Officer determines appropriate for the convenience of the Government,

(b) If the performance of all or any part of the work is, for an unreasonable period of time, suspended, delayed, or interrupted (1) by an act of the Contracting Officer in the administration of this contract, or (2) by the Contracting Officer's failure to act within the time specified in this contract (or within a reasonable time if not specified), an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) necessarily caused by the unreasonable suspension, delay, or interruption, and the contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor, or for which an equitable adjustment is provided for or excluded under any other term or condition of this contract.

(c) A claim under this clause shall not be allowed (1) for any costs incurred more than 20 days before the Contractor shall have notified the Contracting Officer in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order), and (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of the suspension,

delay, or interruption, but not later than the date of final payment under the contract.

13. FAR 52.215-1, EXAMINATION OF RECORDS BY COMPTROLLER GENERAL  
(FEB 1993)

(a) This clause applies if this contract exceeds the small purchase limitation in Part 13 of the Federal Acquisition Regulation (FAR) and was entered in to by negotiation.

(b) The Comptroller General of the United States or a duly authorized representative from the General Accounting Office shall, until 3 years after final payment under this contract or for any shorter period specified in FAR Subpart 4.7, Contractor Records Retention, have access to and the right to examine any of the Contractor's directly pertinent books, documents, papers, or other records involving transactions related to this contract.

(c) The Contractor agrees to include in first-tier subcontracts under this contract a clause to the effect that the Comptroller General or a duly authorized representative from the General Accounting Office shall, until 3 years after final payment under the subcontract or for any shorter period specified in FAR Subpart 4.7, have access to and the right to examine any of the subcontractor's directly pertinent books, documents, papers, or other records involving transactions related to the subcontract. "Subcontract," as used in this clause, excludes (1) purchase orders not exceeding the FAR Part 13 small purchase limitation; and (2) subcontracts or purchase orders for public utility services at rates established to apply uniformly to the public, plus any applicable reasonable connection charge.

(d) The periods of access and examination in paragraphs (b) and (c) above for records relating to (1) -appeals under the Disputes clause, (2) litigation or settlement of claims arising from the performance of this contract, or (3) costs and expenses of this contract to which the Comptroller General or a duly authorized representative from the General Accounting Office has taken exception shall continue until such appeals, litigation, claims, or exceptions are disposed of.

14. FAR 52.215-2, AUDIT-NEGOTIATION (FEB 1993)

(a) Examination of costs. If this is a cost-reimbursement, incentive, time-and-materials, labor-hour, or price-redeterminable contract, or any combination of these, the Contractor shall maintain--and the Contracting Officer or representatives of the Contracting Officer shall have the right to examine and audit-books, records, documents, and other evidence and accounting procedures and practices, regardless of form (e.g., machine readable media such as disk, tape, etc.) or type (e.g., data bases, applications software, data base management software, utilities, etc.), sufficient to reflect properly all costs claimed to have been incurred or anticipated to be incurred in performing this contract. This right of examination shall include inspection at all reasonable times of the

Contractor's plants, or parts of them, engaged in performing the contract

(b) Cost or pricing data. If, pursuant to law, the Contractor has been required to submit cost or pricing data in connection with pricing this contract or any modification to this contract, the Contracting Officer or representatives of the Contracting Officer who are employees of the Government shall have the right to examine and audit all of the Contractor's books, records, documents, and other data, regardless of form (e.g., machine readable media such as disk, tape, etc.) or type (e.g., data bases, applications software, data base management software, utilities, etc.), including computations and projections, related to proposing, negotiating, pricing, or performing the contract or modification, in order to evaluate the accuracy, completeness, and currency of the cost or pricing data. The right of examination shall extend to all documents necessary to permit adequate evaluation of the cost or pricing data submitted, along with the computations and projections used.

(c) Reports. If the Contractor is required to furnish cost, funding, or performance reports, the Contracting Officer or representatives of the Contracting Officer who are employees of the Government shall have the right to examine and audit books, records, other documents, and supporting materials, for the purpose of evaluating (1) the effectiveness of the Contractor's policies and procedures to produce data compatible with the objectives of these reports and (2) the data reported.

(d) Availability. The Contractor shall make available at its office at all reasonable times the materials described in paragraphs (a) and (b), above, for examination, audit, or reproduction, until 3 years after final payment under this contract, or for any shorter period specified in Subpart 4.7, Contractor Records Retention, of the Federal Acquisition Regulation (FAR), or for any longer period required by statute or by other clauses of this contract. In addition--

(1) If this contract is completely or partially terminated, the records relating to the work terminated shall be made available for 3 years after any resulting final termination settlement; and

(2) Records relating to appeals under the Disputes clause or to litigation or the settlement of claims arising under or relating to this contract shall be made available until such appeals, litigation, or claims are disposed of.

(e) Except as otherwise provided in FAR Subpart 4.7, Contractor Records Retention, the Contractor may transfer computer data in machine readable form from one reliable computer medium to another. The Contractor's computer data retention and transfer procedures shall maintain the integrity, reliability, and security of the original data. The contractor's choice of form or type of materials described in paragraphs (a), (b), and (c) of this clause affects neither the Contractor's obligations nor the Government's rights under this clause.

(f) The Contractor shall insert a clause containing all the terms of this clause, including this paragraph (f), in all subcontracts under this contract that are over the small purchase limitation in FAR Part 13,

altering the clause only as necessary to identify properly the contracting parties and the Contracting Officer under the Government prime contract.

15. FAR 52.215-22, PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA (JAN 1991)

(a) If any price, including profit or fee, negotiated in connection with this contract, or any cost reimbursable under this contract, was increased by any significant amount because (1) the Contractor or a subcontractor furnished cost or pricing data that were not complete, accurate, and current as certified in its Certificate of Current Cost or Pricing Data, (2) a subcontractor or prospective subcontractor furnished the Contractor cost or pricing data that were not complete, accurate, and current as certified in the Contractor's Certificate of Current Cost or Pricing Data, or (3) any of these parties furnished data of any description that were not accurate, the price or cost shall be reduced accordingly and the contract shall be modified to reflect the reduction.

(b) Any reduction in the contract price under paragraph (a) above due to defective data from a prospective subcontractor that was not subsequently awarded the subcontract shall be limited to the amount, plus applicable overhead and profit markup, by which (1) the actual subcontract or (2) the actual cost to the Contractor, if there was no subcontract, was less than the prospective subcontract cost estimate submitted by the Contractor; provided, that the actual subcontract price was not itself affected by defective cost or pricing data.

(c) (1) If the Contracting Officer determines under paragraph (a) of this clause that a price or cost reduction should be made, the Contractor agrees not to raise the following matters as a defense:

(i) The Contractor or subcontractor was a sole source supplier or otherwise was in a superior bargaining-position and thus the price of the contract would not have been modified even if accurate, complete, and current cost or pricing data had been submitted.

(ii) The Contracting Officer should have known that the cost or pricing data in issue were defective even though the Contractor or subcontractor took no affirmative action to bring the character of the data to the attention of the Contracting Officer.

(iii) The contract was based on an agreement about the total cost of the contract and there was no agreement about the cost of each item procured under the contract.

(iv) The Contractor or subcontractor did not submit a Certificate of Current Cost or Pricing Data.

(2) (i) Except as prohibited by subdivision (c) (2) (ii) of this clause, an offset in an amount determined appropriate by the Contracting Officer based upon the facts shall be allowed against the amount of a contract price reduction if--



(A) The Contractor certifies to the Contracting Office that, to the best of the Contractor's knowledge and belief, the Contractor is entitled to the offset in the amount requested; and

(B) The Contractor proves that the cost or pricing data were available before the date of agreement on the price of the contract (or price of the modification) and that the data were not submitted before such date.

(ii) An offset shall not be allowed if--

(A) The understated data was known by the Contractor to be understated when the Certificate of Current Cost or Pricing Data was signed; or

(B) The Government proves that the facts demonstrate that the contract price would not have increased in the amount to be offset even if the available data had been submitted before the date of agreement on price.

(d) If any reduction in the contract price under this clause reduces the price of items for which payment was made prior to the date of the modification reflecting the price reduction, the Contractor shall be liable to and shall pay the United States at the time such overpayment is repaid--

(1) Simple interest on the amount of such overpayment to be computed from the date(s) of overpayment to the Contractor to the date the Government is repaid by the Contractor at the applicable underpayment rate effective for each quarter prescribed by the Secretary of the Treasury under 26 U.S.C. 6621(a)(2); and

(2) For Department of Defense contracts only, a penalty equal to the amount of the overpayment, if the Contractor or subcontractor knowingly submitted cost or pricing data which were incomplete, inaccurate, or noncurrent.

16. FAR 52.215-23, PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA-MODIFICATIONS (JAN 1991)

(a) This clause shall become operative only for any modification to this contract involving a pricing adjustment expected to exceed \$100,000, or for the Department of Defense, the National Aeronautics and Space Administration, and the Coast Guard, excepted to exceed \$500,000, except that this clause does not apply to any modification for which the price is--

(1) Based on adequate price competition;

(2) Based on established catalog or market prices of commercial items sold in substantial quantities to the general public; or

(3) Set by law or regulation.

(b) If any price, including profit or fee, negotiated in connection with any modification under this clause, or any cost reimbursable under this contract, was increased by any significant amount because (1) the Contractor or a subcontractor furnished cost or pricing data that were not complete, accurate, and current as certified in its Certificate of Current Cost or Pricing Data, (2) a subcontractor or prospective subcontractor furnished the Contractor cost or pricing data that were not complete, accurate, and current as certified in the Contractor's Certificate of Current Cost or Pricing Data, or (3) any of these parties furnished data of any description that were not accurate, the price or cost shall be reduced accordingly and the contract shall be modified to reflect the reduction. This right to a price reduction is limited to that resulting from defects in data relating to modifications for which this clause becomes operative under paragraph (a) of this clause.

(c) Any reduction in the contract price under paragraph (b) of this clause due to defective data from a prospective subcontractor that was not subsequently awarded the subcontract shall be limited to the amount, plus applicable overhead and profit markup, by which (1) the actual subcontract or (2) the actual cost to the Contractor, if there was no subcontract, was less than the prospective subcontract cost estimate submitted by the Contractor; provided, that the actual subcontract price was not itself affected by defective cost or pricing data.

(d) (1) If the Contracting Officer determines under paragraph (b) of this clause that a price or cost reduction should be made, the Contractor agrees not to raise the following matters as a defense:

(i) The Contractor or subcontractor was a sole source supplier or otherwise was in a superior bargaining position and thus the price of the contract would not have been modified even if accurate, complete, and current cost or pricing data had been submitted.

(ii) The Contracting Officer should have known that the cost or pricing data in issue were defective even though the Contractor or subcontractor took no affirmative action to bring the character of the data to the attention of the Contracting Officer.

(iii) The contract was based on an agreement about the total cost of the contract and there was no agreement about the cost of each item procured under the contract.

(iv) The Contractor or subcontractor did not submit a Certificate of Current Cost or Pricing Data.

(2) (i) Except as prohibited by subdivision (d)(2)(ii) of this clause, an offset in an amount determined appropriate by the Contracting Officer based upon the facts shall be allowed against the amount of a contract price reduction if--

(A) The Contractor certifies to the Contracting Officer that, to the best of the Contractor's knowledge and belief, the Contractor is entitled to the offset in the amount requested; and

(B) The Contractor proves that the cost or pricing data were available before the date of agreement on the price of the contract (or price of the modification) and that the data were not submitted before such date.

(ii) An offset shall not be allowed if--

(A) The understated data was known by the Contractor to be understated when the Certificate of Current Cost or Pricing Data was signed; or

(B) The Government proves that the facts demonstrate that the contract price would not have increased in the amount to be offset even if the available data had been submitted before the date of agreement on price.

(e) If any reduction in the contract price under this clause reduces the price of items for which payment was made prior to the date of the modification reflecting the price reduction, the Contractor shall be liable to and shall pay the United States at the time such overpayment is repaid--

(1) Simple interest on the amount of such overpayment to be computed from the date(s) of overpayment to the contractor to the date the Government is repaid by the Contractor at the applicable underpayment rate effective for each quarter prescribed by the Secretary of the Treasury under 25 U.S.C. 6621(a)(2); and

(2) For Department of Defense contracts only, a penalty equal the amount of the overpayment, if the Contractor or subcontractor knowingly submitted cost or pricing data which were incomplete, inaccurate, or noncurrent

17. FAR 52.215-24, SUBCONTRACTOR COST OR PRICING DATA (DEC 1991)

(a) Before awarding any subcontract expected to exceed \$100,000, or for the Department of Defense, the National Aeronautics and Space Administration, and the Coast Guard, expected to exceed \$500,000 when entered into, or before pricing any subcontract modification involving a pricing adjustment expected to exceed \$100,000, or for the Department of Defense, the National Aeronautics and Space Administration, and the Coast Guard, expected to exceed \$500,000, the Contractor shall require the subcontractor to submit cost or pricing data (actually or by specific identification in writing), unless the price is--

(1) Based on adequate price competition;

(2) Based on established catalog or market prices of commercial items sold in substantial quantities to the general public; or

(3) Set by law or regulation.

(b) The Contractor shall require the subcontractor to certify in substantially the form prescribed in Subsection 15.804-4 of the Federal

Acquisition Regulation (FAR) that, to the best of its knowledge and belief, the data submitted under paragraph (a) of this clause were accurate, complete, and current as of the date of agreement on the negotiated price of the subcontract or subcontract modification.

(c) In each subcontract that exceeds \$100,000, or for the Department of Defense, the National Aeronautics and Space Administration, and the Coast Guard, in each subcontract that exceeds \$500,000 when entered into, the Contractor shall insert either--

(1) The substance of this clause, including this paragraph (c), if paragraph (a) of this clause requires submission of cost or pricing data for the subcontract; or

(2) The substance of the clause at FAR 52.215-25, Subcontractor Cost or Pricing Data-Modifications.

18. FAR 52.215-25, SUBCONTRACTOR COST OR PRICING DATA-MODIFICATIONS  
(DEC 1991)

(a) The requirements of paragraphs (b) and (c) of this clause shall (1) become operative only for any modification to this contract involving a pricing adjustment expected to exceed \$100,000, or for the Department of Defense, the National Aeronautics and Space Administration, and the Coast Guard, -expected-to exceed \$500,000; and (2) be limited to such modifications.

(b) Before awarding any subcontract expected to exceed \$100,000, or \$500,000 for the Department of Defense, the National Aeronautics and Space Administration, and the Coast Guard, when entered into, or pricing any subcontract modification involving a pricing adjustment expected to exceed \$100,000, or for the Department of Defense, the National Aeronautics and Space Administration, and the Coast Guard expected to exceed \$500,000, the Contractor shall require the subcontractor to submit cost or pricing data (actually or by specific identification in writing), unless the price is-

(1) Based on adequate price competition;

(2) Based on established catalog or market prices of commercial items sold in substantial quantities to the general public; or

(3) Set by law or regulation.

(c) The Contractor shall require the subcontractor to certify in substantially the form prescribed in Subsection 15.804-4 of the Federal Acquisition Regulation (FAR) that, to the best of its knowledge and belief, the data submitted under paragraph (b) of this clause were accurate, complete, and current as of the date of agreement on the negotiated price of the subcontract or subcontract modification.

(d) The Contractor shall insert the substance of this clause, including this paragraph (d), in each subcontract that exceeds \$100,000, or for the Department of Defense, the National Aeronautics and Space

Administration, and the Coast Guard, in each subcontract that exceeds \$500,000, when entered into.

19. 52.215-27, TERMINATION OF DEFINED BENEFIT PENSION PLANS (SEP 1989)

The Contractor shall promptly notify the Contracting Officer in writing when it determines that it will terminate a defined benefit pension plan or otherwise recapture such pension fund assets. If pension fund assets revert to the Contractor or are constructively received by it under a termination or otherwise, the Contractor shall make a refund or give a credit to the Government for its equitable share as required by FAR 31.205-6(j) (4). The Contractor shall include the substance of this clause in all subcontracts under this contract which meet the applicability requirement of FAR 15.804-8(e).

20. FAR 52.215-31, WAIVER OF FACILITIES CAPITAL COST OF MONEY (SEP 1987)

The Contractor did not include facilities capital cost of money as a proposed cost of this contract. Therefore, it is an unallowable cost under this contract.

21. FAR 52.215-39, REVERSION OR ADJUSTMENT OF PLANS FOR POSTRETIREMENT BENEFITS OTHER THAN PENSIONS (PRB) (JUL 1991)

The Contractor shall promptly notify the Contracting Officer in writing when it determines that it will terminate or reduce a PRB plan. If PRB fund assets revert, or inure, to the Contractor or are constructively received by it under a plan termination or otherwise, the Contractor shall make a refund or give a credit to the Government for its equitable share as required by FAR 31.205-6(o)(5). The Contractor shall include the substance of this clause in all subcontracts under this contract which meet the applicability requirements of FAR 15.804-8(f). The resulting adjustment to prior years' PRB costs will be determined and applied in accordance with FAR 31.205-6(o).

22. FAR 52.216-18, ORDERING (APR 1984)

(a) Any supplies and services to be furnished under this contract shall be ordered by issuance of delivery orders by the individuals or activities designated in the Schedule. Such orders may be issued from . . . . . through . . . . . [insert dates].

(b) All delivery orders are subject to the terms and conditions of this contract. In the event of conflict between a delivery order and this contract, the contract shall control.

(c) If mailed, a delivery order is considered "issued" when the Government deposits the order in the mail. Orders may be issued orally or by written telecommunications only if authorized in the Schedule.

23. FAR 52.216-19, DELIVERY-ORDER LIMITATIONS (APR 1984)

(a) Minimum order. When the Government requires supplies or services covered by this contract in an amount of less than . . . . . [insert dollar figure or quantity], the Government is not obligated to purchase, nor is the Contractor obligated to furnish, those supplies or services under the contract.

(b) Maximum order. The Contractor is not obligated to honor--

(1) Any order for a single item in excess of . . . . . [insert dollar figure or quantity];

(2) Any order for a combination of items in excess of . . . . . [insert dollar figure or quantity]; or

(3) A series of orders from the same ordering office within . . . . . days that together call for quantities exceeding the limitation in subparagraph (1) or (2) above.

(c) If this is a requirements contract (i.e., includes the Requirements clause at subsection 52.216-21 of the Federal Acquisition Regulation (FAR)), the Government is not required to order a part of any one requirement from the Contractor if that requirement exceeds the maximum-order limitations in paragraph (b) above.

(d) Notwithstanding paragraphs (b) and (c) above, the Contractor shall honor any order exceeding the maximum order limitations in paragraph (b), unless that order (or orders) is returned to the ordering office within . . . . . days after issuance, with written notice stating the Contractor's intent not to ship the item (or items) called for and the reasons. Upon receiving this notice, the Government may acquire the supplies or services from another source.

24. FAR 52.216-22, INDEFINITE QUANTITY (APR 1984)

(a) This is an indefinite-quantity contract for the supplies or services specified, and effective for the period stated, in the Schedule. The quantities of supplies and services specified in the Schedule are estimates only and are not purchased by this contract.

(b) Delivery or performance shall be made only as authorized by orders issued in accordance with the Ordering clause. The Contractor shall furnish to the Government, when and if ordered, the supplies or services specified in the Schedule up to and including the quantity designated in the Schedule as the "maximum." The Government shall order at least the quantity of supplies or services designated in the Schedule as the "minimum."

(c) Except for any limitations on quantities in the Delivery-Order Limitations clause or in the Schedule, there is no limit on the number of orders that may be issued. The Government may issue orders requiring delivery to multiple destinations or performance at multiple locations.

(d) Any order issued during the effective period of this contract and not completed within that period shall be completed by the Contractor within the time specified in the order. The contract shall govern the Contractor's and Government's rights and obligations with respect to that order to the same extent as if the order were completed during the contract's effective period; provided, that the Contractor shall not be required to make any deliveries under this contract after . . . . . [insert date].

25. FAR 52.217-9, OPTION TO EXTEND THE TERM OF THE CONTRACT (MAR 1989)

(a) The Government may extend the term of this contract by written notice to the Contractor within [insert in the clause the period of time in which the Contracting Officer has to exercise the option]; provide, that the Government shall give the Contractor a preliminary written notice Of its intent to extend at least 60 days before the contract expires. The preliminary notice does not commit the Government to an extension.

(b) If the Government exercises this option, the extended contract shall be considered to include this option provision.

(c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed...(months) (years).

26. FAR 52.222-26, EQUAL OPPORTUNITY (APR 1984)

(a) If, during any 12-month period (including the 12 months preceding the award of this contract), the Contractor has been or is awarded nonexempt Federal contracts and/or subcontracts that have an aggregate value in excess of \$10,000, the Contractor shall comply with subparagraphs (b) (1) through (11) below. Upon request, the Contractor shall provide information necessary to determine the applicability of this clause.

(b) During performing this contract, the Contractor agrees as follows:

(1) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin.

(2) The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. This shall include, but not be limited to, (i) employment, (ii) upgrading, (iii) demotion, (iv) transfer, (v) recruitment or recruitment advertising, (vi) layoff or termination, (vii) rates of pay or other forms of compensation, and (viii) selection for training, including apprenticeship.

(3) The Contractor shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this clause.

(4) The Contractor shall, in all solicitations or advertisement for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(5) The Contractor shall send, to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.

(6) The Contractor shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.

(7) The Contractor shall furnish to the contracting agency all information required by Executive Order 11246, as amended, and by the rules, regulations, and orders of the Secretary of Labor. Standard Form 100 (EEO-1), or any successor form, is the prescribed form to be files within 30 days following the award, unless filed within 12 months preceding the date of award.

(8) The Contractor shall permit access to its books, records, and accounts by the contracting agency or the Office of Federal Contract Compliance Programs (OFCCP) for the purposes of investigation to ascertain the Contractor's compliance with the applicable rules, regulations, and orders.

(9) If the OFCCP determines that the Contractor is not in compliance with this clause or any rule, regulation, or order of the Secretary of Labor, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts, under the procedures authorized in Executive Order 11246, as amended,. In addition, sanctions may be imposed and remedies invoked against the Contractor as provided in Executive Order 11246, as amended, the rules, regulations, and orders of the Secretary of Labor, or as otherwise provided by law.

(10) The Contractor shall include the terms and conditions of subparagraph (b) (1) through (11) of this clause in every subcontract or purchase order that is not exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each subcontractor or vendor.

(11) The Contractor shall take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing these terms and conditions, including sanctions for noncompliance; provided, that if the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of any direction, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.



(c) Notwithstanding any other clause in this contract, disputes relative to this clause will be governed by the procedures in 41 CFR 60 1.1.

27. FAR 52.222-29, NOTIFICATION OF VISA DENIAL (APR 1984)

It is a violation of Executive Order 11246, as amended, for a Contractor to refuse to employ any applicant or not to assign any person hired in the United States, on the basis that the individual's race, color, religion, sex, or national origin is not compatible with the policies of the country where the work is to be performed or for whom the work will be performed (41 CFR 60-1.10). The Contractor agrees to notify the Department Of State, Washington, DC. Attention: director, Bureau of Politico-Military Affairs, and the Director, Office of Federal Contract Compliance Programs, when it has knowledge of any employee or potential employee being denied an entry visa to a country in which the Contractor is required to perform this contract, and it believes the denial is attributable to the race, color, religion, sex, or national origin of the employee or potential employee.

28. FAR 52.223-3, HAZARDOUS MATERIAL, IDENTIFICATION AND MATERIAL SAFETY DATA (NOV 1991)

(a) "Hazardous material", as used in this clause, includes any material defined as hazardous under the latest version of Federal Standard No. 313 (including revisions adopted during the term of the contract).

(b) The offeror must list any hazardous material, as defined in paragraph (a) of this clause, to be delivered under this contract. The hazardous material shall be properly identified and include any applicable identification number, such as National Stock Number or Special Item Number. This information shall also be included on the Material Safety Data Sheet submitted under this contract.

Material (If none, insert "None")	Identification No.
_____	_____
_____	_____
_____	_____

(c) The apparently successful offeror, by acceptance of the contract, certifies that the list in paragraph (b) of this clause is complete. This list must be updated during performance of the contract whenever the Contractor determines that any other material to be delivered under this contract is hazardous.

(d) The apparently successful offeror agrees to submit, for each item as required prior to award, a Material Safety Data Sheet, meeting the requirements of 29 CFR 1910.1200(g) and the latest version of Federal Standard No. 313, for all hazardous material identified in paragraph (b), of

this clause. Data shall be submitted in accordance with Federal Standard NO. 313, whether or not the apparently successful offeror is the actual manufacturer of these items. Failure to submit the Material Safety Data Sheet prior to award may result in the apparently successful offeror being considered nonresponsible and ineligible for award.

(e) If, after award, there is a change in the composition of the item(s) or a revision to Federal Standard No. 313, which renders incomplete or inaccurate the data submitted under paragraph (d) of this clause or the certification submitted under paragraph (c) of this clause, the Contractor shall promptly notify the Contracting Officer and resubmit the data.

(f) Neither the requirements of this clause nor any act or failure to act by the Government shall relieve the Contractor of any responsibility or liability for the safety of Government, Contractor, or subcontractor personnel or property.

(g) Nothing contained in this clause shall relieve the Contractor from complying with applicable Federal, State, and local laws, codes, ordinances, and regulations (including the obtaining of licenses and permits) in connection with hazardous material.

(h) The Government's rights in data furnished under this contract with respect to hazardous material are as follows:

(1) To use, duplicate and disclose any data to which this clause is applicable. The purposes of this right are to--

(i) Apprise personnel of the hazards to which they may be exposed in using, handling, packaging, transporting, or disposing of hazardous materials;

(ii) Obtain medical treatment for those affected by the material; and

(iii) Have others use, duplicate, and disclose the data for the Government for these purposes.

(2) To use, duplicate, and disclose data furnished under this clause, in accordance with subparagraph (h) (1) of this clause, in precedence over any other clause of this contract providing for rights in data.

(3) The Government is not precluded from using similar or identical data acquired from other sources.

29. FAR 52.224-1, PRIVACY ACT NOTIFICATION (APR 1984)

The Contractor will be required to design, develop, or operate a system of records on individuals, to accomplish an agency function subject to the Privacy Act of 1974, Public Law 93-579, December 31, 1974 (5 U.S.C. 552a) and applicable agency regulations. Violation of the Act may involve the imposition of criminal penalties.

30. FAR 52.224-2, PRIVACY ACT (APR 1984)

(a) The Contractor agrees to--

(1) Comply with the Privacy Act of 1974 (the Act) and the agency rules and regulations issued under the Act in the design, development, or operation of any system of records on individuals to accomplish an agency function when the contract specifically identifies--

(i) The systems of records; and

(ii) The design, development, or operation work that the contractor is to perform;

(2) Include the Privacy Act notification contained in this contract in every solicitation and resulting subcontract and in every subcontract awarded without a solicitation, when the work statement in the proposed subcontract requires the redesign, development, or operation of a system of records on individuals that is subject to be Act; and

(3) Include this clause, including this subparagraph (3), in all subcontracts awarded under this contract which requires the design, development, or operation of such a system of records.

(b) In the event of violations of the Act, a civil action may be brought against the agency involved when the violation concerns the design, development, or operation of a system of records on individuals to accomplish an agency function and criminal penalties may be imposed upon the officers or employees of the agency when the violation concerns the operation of a system of records on individuals to accomplish an agency function. For purposes of the Act, when the contract is for the operation of a system of records on individuals to accomplish an agency function, the Contractor is considered to be an employee of the agency.

(c) (1) "Operation of a system of records," as used in this clause, means performance of any of the activities associated with maintaining the system of records, including the collection, use, and dissemination of records.

(2) "Record," as used in this clause, means any item, collection, or grouping of information about an individual that is maintained by an agency, including, but not limited to, education, financial transactions, medical history, and criminal or employment history and that contains the person's name, or the identifying number, symbol, or other identifying particular assigned to the individual, such as a fingerprint or voiceprint or a photograph.

(3) "System of records on individuals," as used in this clause means a group of any records under the control of any agency from which information is retrieved by the name of the individual or by some identifying number, symbol, or other identifying particular assigned to the individual.

31. FAR 52.225-7, BALANCE OF PAYMENTS PROGRAM (APR 1984)

(a) This clause implements the Balance of Payments Program by providing a preference for domestic end products or services over foreign end products or services.

"Components," as used in this clause, means those articles, materials, and supplies directly incorporated in to the end products.

"Domestic end product," as used in this clause, means--

(1) An unmanufactured end product mined or produced in the United States; or

(2) An end product manufactured in the United States, if the cost of its components mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. Components of foreign origin of the same class or kind as those that the agency determined are not mined, produced, or manufactured in the United States in sufficient reasonably available commercial quantities of a satisfactory quality shall be treated as domestic. Components of unknown origin shall be considered foreign. Scrap generated, collected, and prepared for processing in the United States is considered domestic.

"Domestic services," as used in this clause, means services performed in the United States. If services provided under a single contract are performed both in and outside the United States, they shall be considered domestic if 25 percent or less of their total cost is attributable to services (including incidental supplies used in connection with these services) performed outside the United States.

"End product," as used in this clause, means an article, material, or supply acquired for public use under this contract.

"Foreign end product," as used in this clause, means a product other than a domestic end product.

(b) The contractor agrees that there will be delivered under this contract only domestic end products or services unless, in its offer, it specified delivery of foreign end products or services in the provision entitled "Balance of Payments Program Certificate." An offer based on supplying a foreign end product or service, if accepted, will permit the contractor to supply a product or service without regard to the requirements of this clause.

(c) Offers will be evaluated in accordance with paragraph 25.303(b) of the Federal Acquisition Regulation.

32. FAR 52.225-11, RESTRICTIONS ON CERTAIN FOREIGN PURCHASES (MAY 1992)

(a) Unless advance written approval of the Contracting Officer is obtained, the Contractor shall not acquire for use in the performance of this contract--

(1) any supplies or services originating from sources within the communist areas of North Korea, Vietnam, Cambodia, or Cuba;

(2) Any supplies that are or were located in or transported from or through North Korea, Vietnam, Cambodia, or Cuba; or

(3) Arms, ammunition, or military vehicles produced in South Africa, or manufacturing data for such articles.

(b) The Contractor shall not acquire for use in the performance of this contract supplies or services originating from sources within Iraq, any supplies that are or were located in or transported from or through Iraq, or any supplies or services from entities controlled by the Government of Iraq.

(c) The Contractor agrees to insert the provisions of this clause, including this paragraph (c), in all subcontracts hereunder.

33. FAR 52.225-14, INCONSISTENCY BETWEEN ENGLISH VERSION AND TRANSLATION OF CONTRACT (AUG 1989)

In the event of inconsistency between any terms of this contract and any translation thereof into another language, the English language meaning shall control.

34. FAR 52.227-1, AUTHORIZATION AND CONSENT (APR 1984)

(a) The Government authorizes and consents to all use and manufacture, in performing this contract or any subcontract at any tier, of any invention described in and covered by a United States patent (1) embodied in the structure or composition of any article the delivery of which is accepted by the Government under this contract or (2) used in machinery, tools, or methods whose use necessarily results from compliance by the Contractor or a subcontractor with (i) specifications or written provisions forming a part of this contract or (ii) specific written instructions given by the Contracting Officer directing the manner of performance. The entire liability to the Government for infringement of a patent of the United States shall be determined solely by the provisions of the indemnity clause, if any, included in this contract or any subcontract hereunder (including any lower-tier subcontract), and the Government assumes liability for all other infringement to the extent of the authorization and consent hereinabove granted.

(b) The Contractor agrees to include, and require inclusion of, this clause, suitably modified to identify the parties, in all subcontracts at any tier for supplies or services (including construction, architect-engineer services, and materials, supplies, models, samples, and design or testing services expected to exceed \$25,000); however, omission of this clause from any subcontract, under or over \$25,000 does not affect this authorization and consent.

35. FAR 52.228-3, WORKERS' COMPENSATION INSURANCE (DEFENSE BASE ACT)  
(APR 1984)

The Contractor shall (a) provide, before commencing performance under this contract, such workers' compensation insurance or security as the Defense Base Act (42 U.S.C. 1651, et seq.) requires and (b) continue to maintain it until performance is completed. The Contractor shall insert, in all subcontracts under this contract to which the Defense Base Act applies, a clause similar to this clause (including this sentence) imposing upon those subcontractors this requirement to comply with the Defense Base Act.

36. FAR 52.228-4, WORKERS' COMPENSATION AND WAR-HAZARD INSURANCE OVERSEAS  
(APR 1984)

(a) This paragraph applies if the Contractor employs any person who, but for a waiver granted by the Secretary of Labor, would be subject to workers' compensation insurance under the Defense Base Act (42 U.S.C. 1651, et seq.). On behalf of employees for whom the applicability of the defense Base Act has been waived, the Contractor shall (1) provide, before commencing performance under this contract, at least that workers' compensation insurance or the equivalent as the laws of the country of which these employees are nationals may require, and (2) continue to maintain it until performance is completed. The Contractor shall insert, in all subcontracts under this contract to which the Defense Base Act would apply but for the waiver, a clause similar to this paragraph (a) (including this sentence) imposing upon those subcontractors this requirement to provide such workers' compensation insurance coverage.

(b) This paragraph applies if the Contractor or any subcontractor under this contract employs any person who, but for a waiver granted by the Secretary of Labor, would be subject to the War Hazards Compensation Act (42 U.S.C. 1701, et seq.). On behalf of employees for whom the applicability of the Defense Base Act (and hence that of the War Hazards Compensation Act) has been waived, the Contractor shall, subject to reimbursement as provided elsewhere in this contract, afford the same protection as that provided in the War Hazards Compensation Act, except that the level of benefits shall conform to any law or international agreement controlling the benefits to which the employees may be entitled. In all other respects, the standards of the War Hazards Compensation Act shall apply; e.g., the definition of war-hazard risks (injury, death, capture, or detention as the result of a war hazard as defined in the Act), proof of loss, and exclusion of benefits otherwise covered by workers' compensation insurance or the equivalent. Unless the Contractor elects to assume directly the liability to subcontractor employees created by this clause, the Contractor shall insert, in all subcontracts under this contract to which the War Hazards Compensation Act would apply but for the waiver, a clause similar to this paragraph (b) (including this sentence) imposing upon those subcontractors this requirement to provide war-hazard benefits,

37. FAR 52.229-6, TAXES--FOREIGN FIXED-PRICE CONTRACT (JAN 1991)

(a) To the extent that this contract provides for furnishing supplies Or performing services outside the United States, its possessions, and Puerto Rico, this clause applies in lieu of any Federal, State, and local taxes clause of the contract.

(b) "Contract date," as used in this clause, means the date set for bid opening or, if this is a negotiated contract or a modification, the effective date of this contract or modification.

"Country concerned," as used in this clause, means any country, other than the United States, its possessions, and Puerto Rico, in which expenditures under this contract are made.

"Tax" and "taxes," as used in this clause, include fees and charges for doing business that are levied by the government of the country concerned or by its political subdivisions.

"All applicable taxes and duties," as used in this clause, means all taxes and duties, in effect on the contract date, that the taxing authority is imposing and collecting on the transactions or property covered by this contract, pursuant to written ruling or regulation in effect on the contract date.

"After-imposed tax," as used in this clause, means any new or increased tax or duty, or tax that was exempted or excluded on the contract date b whose exemption was later revoked or reduced during the contract period, other than excepted tax, on the transactions or property covered by this contract that the Contractor is required to pay or bear as the result of legislative, judicial, or administrative action taking effect after the contract date.

"After-relieved tax," as used in this clause, means any amount of tax or duty, other than an excepted tax, that would otherwise have been payable on the transactions or property covered by this contract, but which the Contractor is not required to pay or bear, or for which the Contractor obtains a refund, as the result of legislative, judicial, or administrative action taking effect after the contract date.

"Excepted tax," as used in this clause, means social security or other employment taxes, net income and franchise taxes, excess profits taxes, capital stock taxes, transportation taxes, unemployment compensation taxes, and property taxes. "Excepted tax" does not include gross income taxes levied on or measured by sales or receipts from sales, property taxes assessed on completed supplies covered by this contract, or any tax assessed on the Contractor's possession of, interest in, or use of property, title to which is in the U.S. Government.

(c) Unless otherwise provided in this contract, the contract price includes all applicable taxes and duties, except taxes and duties that the Government of the United States and the government of the country concerned have agreed shall not be applicable to expenditures in such country by and on behalf of the United States.

(d) The contract price shall be increased by the amount of any after-imposed tax or of any tax or duty specifically excluded from the contract price by a provision of this contract that the Contractor is required to pay or bear, including any interest or penalty, if the Contractor states in writing that the contract price does not include any contingency for such tax and if liability for such tax, interest, or penalty was not incurred through the Contractor's fault, negligence, or failure to follow instructions of the Contracting Officer or to comply with the provisions of paragraph (i) below.

(e) The contract price shall be decreased by the amount of any after-relieved tax, including any interest or penalty. The Government of the United States shall be entitled to interest received by the Contractor incident to a refund of taxes to the extent that such interest was earned after the Contractor was paid by the Government of the United States for such taxes. The Government of the United States shall be entitled to repayment of any penalty refunded to the Contractor to the extent that the penalty was paid by the Government.

(f) The contract price shall be decreased by the amount of any tax or duty, other than an excepted tax, that was included in the contract and that the Contractor is required to pay or bear, or does not obtain a refund of, through the Contractor's fault, negligence, or failure to follow instructions of the Contracting Officer or to comply with the provisions of paragraph (i) below.

(g) No adjustment shall be made in the contract price under this clause unless the amount of the adjustment exceeds \$250.

(h) If the Contractor obtains a reduction in tax liability under the United States Internal Revenue Code (Title 26, U.S. Code) because of the payment of any tax or duty that either was included in the contract price or was the basis of an increase in the contract price, the amount of the reduction shall be paid or credited to the Government of the United States as the Contracting Officer directs.

(i) The Contractor shall take all reasonable action to obtain exemption from or refund of any taxes or duties, including interest or penalty, from which the United States Government, the Contractor, any subcontractor, or the transactions or property covered by this contract are exempt under the laws of the country concerned or its political subdivisions or which the governments of the United States and of the country concerned have agreed shall not be applicable to expenditures in such country by or on behalf of the United States.

(j) The Contractor shall promptly notify the Contracting Officer of all matters relating to taxes or duties that reasonably may be expected to result in either an increase or decrease in the contract price and shall take appropriate action as the Contracting Officer directs. The contract price shall be equitably adjusted to cover the costs of action taken by the Contractor at the direction of the Contracting Officer, including any interest, penalty, and reasonable attorneys' fees.



38. FAR 52.229-7, TAXES--FIXED-PRICE CONTRACTS WITH FOREIGN GOVERNMENTS  
(JAN 1991)

(a) "Contract date," as used in this clause, means the date set for bid opening or, if this is a negotiated contract or a modification, the effective date of this contract or modification.

(b) the contract price, including the prices in any subcontracts under this contract, does not include any tax or duty that the Government of the United States and the Government of . . . . . (insert name of the foreign government] have agreed shall not apply to expenditures made by the United States in . . . . . [insert name of country], or any tax or duty not applicable to this contract or any subcontracts under this contract, pursuant to the laws of . . . . . [insert name of country]. If any such tax or duty has been included in the contract price, through error or otherwise, the contract price shall be correspondingly reduced.

(c) If, after the contract date, the Government of the United States and the Government of . . . . . [insert name of the foreign government] agree that any tax or duty included in the contract price shall not apply to expenditures by the United States in . . . . . [insert name of country], the contract price shall be reduced accordingly.

(d) No adjustment shall be made in the contract price under this clause unless the amount of the adjustment exceeds \$250.

39. FAR 52.232-10, PAYMENTS UNDER FIXED-PRICE ARCHITECT ENGINEER  
CONTRACTS (AUG 1987)

(a) Estimates shall be made monthly of the amount and value of the work and services performed by the Contractor under this contract which meet the standards of quality under this contract. The estimates shall be prepared by the Contractor and accompanied by any supporting data required by the Contracting Officer.

(b) Upon approval of the estimate by the Contracting Officer, payment upon properly executed vouchers shall be made to the Contractor, as soon as practicable, of 90 percent of the approved amount, less all previous payments; provided, that payment may be made in full during any months in which the Contracting Officer determines that performance has been satisfactory. Also, whenever the Contracting Officer determines that the work is substantially complete and that the amount retained is in excess of the amount adequate for the protection of the Government, the Contracting Officer may release the excess amount to the Contractor.

(c) Upon satisfactory completion by the Contractor and acceptance by the Contracting Officer of the work done by the Contractor under the "Statement of Architect-Engineer Services", the Contractor will be paid the unpaid balance of any money due for work under the statement, including retained percentages relating to this portion of the work. Upon satisfactory completion and final acceptance of the construction work, the Contractor shall be paid any unpaid balance of money due under this contract.

(d) Before final payment under the contract, or before settlement upon termination of the contract, and as a condition precedent thereto, the Contractor shall execute and deliver to the Contracting Officer a release of all claims against the Government arising under or by virtue of this contract, other than any claims that are specifically excepted by the Contractor from the operation of the release in amounts stated in the release.

(e) Notwithstanding any other provision in this contract, and specifically paragraph (b) of this clause, progress payments shall not exceed 80 percent on work accomplished on undefinitized contract actions. A "contract action" is any action resulting in a contract, as defined in FAR Subpart 2.1, including contract modifications for additional supplies or services, but not including contract modifications that are within the scope and under the terms of the contract, such as contract modifications issued pursuant to the Changes clause, or funding and other administrative changes.

40. FAR 52.232-17, INTEREST (JAN 1991)

(a) Notwithstanding any other clause of this contract, all amounts except amounts that are repayable and which bear interest under a Price Reduction for Defective Cost or Pricing Data clause, that become payable by the Contractor to the Government under this contract (net of any applicable tax credit under the Internal Revenue Code (26 U.S.C. 1481)) shall bear simple interest from the date due until paid unless paid within 30 days of becoming due. The interest rate shall be the interest rate established by the Secretary of the Treasury as provided in Section 12 of the Contract Disputes Act of 1978 (Public Law 95-563), which is applicable to the period in which the amount becomes due, as provided in paragraph (b) of this clause, and then at the rate applicable for each six-month period as fixed by the Secretary until the amount is paid.

(b) Amounts shall be due at the earliest of the following dates:

(1) The date fixed under this contract.

(2) The date of the first written demand for payment consistent with this contract, including any demand resulting from a default termination.

(3) The date the Government transmits to the Contractor a proposed supplemental agreement to confirm completed negotiations establishing the amount of debt.

(4) If this contract provides for revision of prices, the date of written notice to the Contractor stating the amount of refund payable in connection with a pricing proposal or a negotiated pricing agreement not confirmed by contract modification.

(c) The interest charge made under this clause may be reduced under the procedures prescribed in 32.614-2 of the Federal Acquisition Regulation in effect on the date of this contract.

41. FAR 52.232-23, ASSIGNMENT OF CLAIMS (JAN 1986) - ALTERNATE I  
(APR 1984)

(a) The Contractor, under the Assignment of Claims Act, as amended, 31 U.S.C. 3727, 41 U.S.C. 15 (hereafter referred to as "the Act"), may assign its rights to be paid amounts due or to become due as a result of the performance of this contract to a bank, trust company, or other financing institution, including any Federal lending agency. The assignee under such an assignment may thereafter further assign or reassign its right under the original assignment to any type of financing institution described in the preceding sentence. Unless otherwise stated in this contract, payments to an assignee of any amounts due or to become due under this contract shall not, to the extent specified in the Act, be subject to reduction or setoff.

(b) Any assignment or reassignment authorized under the Act and this clause shall cover all unpaid amounts payable under this contract, and shall not be made to more than one party, except that an assignment or reassignment may be made to one party as agent or trustee for two or more parties participating in the financing of this contract.

(c) The Contractor shall not furnish or disclose to any assignee under this contract any classified document (including this contract) or information related to work under this contract until the Contracting Officer authorizes such action in writing.

42. FAR 52.232-26, PROMPT PAYMENT FOR FIXED-PRICE ARCHITECT-ENGINEER CONTRACTS (APR 1989)

Notwithstanding any other payment terms in this contract, the Government will make invoice payments and contract financing payments under the terms and conditions specified in this clause. Payment shall be considered as being made on the day a check is dated or an electronic funds transfer is made. Definitions of pertinent terms are set forth in 32.902. All days referred to in this clause are calendar days, unless otherwise specified.

(a) Invoice Payments

(1) For purposes of this clause, "invoice payment" means a Government disbursement of monies to a Contractor under a contract or other authorization for work or services accepted by the Government, payments for partial deliveries that have been accepted by the Government, and progress payments based on contracting officer approval of the estimated amount and value of work or services performed.

(2) The due date for making invoice payments shall be as described in this subparagraph (a) (2).

(i) The due date for work or services completed by the Contractor shall be the later of the following two events:

(A) The 30th day after the designated billing office has received a proper invoice from the Contractor.

(B) The 30th day after Government acceptance of the work or services completed by the Contractor. On a final invoice where the payment amount is subject to contract settlement actions (e.g., release of claims), acceptance shall be deemed to have occurred on the effective date of the contract settlement.

(ii) The due date for progress payments shall be the 30th day after Government approval of Contractor estimates of work or services accomplished.

(iii) However, if the designated billing office fails to annotate the invoice or payment request with the actual date of receipt, the payment due date shall be deemed to be the 30th day after the date the Contractor's invoice or payment request is dated, provided a proper invoice or payment request is received and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

(3) An invoice is the Contractor's bill or written request for payment under the contract for work or services performed under the contract. An invoice shall be prepared and submitted to the designated billing office. A proper invoice must include the items listed in subdivisions (a) (3) (i) through (a)(3) (viii) of this clause. If the invoice does not comply with these requirements, then the Contractor will be notified of the defect within 7 days after receipt of the invoice at the designated billing office. Untimely notification will be taken into account in the computation of any interest penalty owed the Contractor in the manner described in subparagraph (a)(5) of this clause:

(i) Name and address of the Contractor.

(ii) Invoice date.

(iii) Contract number or other authorization for work or services performed (including order number and contract line item number).

(iv) Description of work or services performed.

(v) Delivery and payment terms (e.g., prompt payment discount terms).

(vi) Name and address of Contractor official to whom payment is to be sent (must be the same as that in the contract or in a proper notice-of assignment).

(vii) Name (where practicable), title, phone number, and mailing address of person to be notified in event of a defective invoice.

(viii) Any other information or documentation required by the contract.

(4) An interest penalty shall be paid automatically by the designated payment office, without request from the Contractor, if payment is not made by the due date and the conditions listed in subdivisions (a) (4) (i) through (a) (4) (iii) of this clause are met, if applicable.

(i) A proper invoice was-received by the designated billing office.

(ii) A receiving report or other Government documentation authorizing payment was processed and there was no disagreement over quantity, quality, Contractor compliance with any contract term or condition, or requested progress payment amount.

(iii) In the case of a final invoice for any balance of funds due the Contractor for work or services performed, the amount was not subject to further contract settlement actions between the Government and the Contractor.

(5) The interest penalty shall be at the rate established by the Secretary of the Treasury under section 12 of the Contract Disputes Act of 1978 (41 U.S.C. 611) that is in effect on the day after the due date, except where the interest penalty is prescribed by other governmental authority. This rate is referred to as the "Renegotiation Board Interest Rate," and it is published in the Federal Register semiannually on or about January 1 and July 1. The interest penalty shall accrue daily on the invoice payment amount approved by the Government and be compounded in 30-day increments inclusive from the first day after the due date through the payment date. That is, interest accrued at the end of any 30-day period will be added to the approved invoice payment amount and be subject to interest penalties if not paid in the succeeding 30-day period. If the designated billing office failed to notify the Contractor of a defective invoice within the periods prescribed in subparagraph (a) (3) of this clause, then the due date on the corrected invoice will be adjusted by subtracting the number of days taken beyond the prescribed notification of defects period. Any interest penalty owed the Contractor will be based on this adjusted due date. Adjustments will be made by the designated payment office for errors in calculating interest penalties, if requested by the Contractor.

(i) For the sole purpose of computing an interest penalty that might be due the Contractor, Government acceptance or approval shall be deemed to have occurred constructively as shown in subdivisions (a) (5) (i) (A) and (B) of this clause. In the event that actual acceptance or approval occurs within the constructive acceptance or approval period, the determination of an interest penalty shall be based on the actual date of acceptance or approval. Constructive acceptance or constructive approval requirements do not apply if there is a disagreement over quantity, quality, Contractor compliance with a contract provision, or requested progress payment amounts. These requirements also do not compel Government officials to accept work or services, approve Contractor estimates, perform contract administration functions, or make payment prior to fulfilling their responsibilities.

(A) For work or services completed by the Contractor, Government acceptance shall be deemed to have occurred constructively on the 7th day after the Contractor has completed the work or services in accordance with the terms and conditions of the contract.

(B) For progress payments, Government approval shall be

deemed to have occurred on the 7th day after Contractor estimates have been received by the designated billing office.

(ii) The following periods of time will not be included in the determination of an interest penalty:

(A) The period taken to notify the Contractor of defects in invoices submitted to the Government, but this may not exceed 7 days.

(B) The period between the defects notice and resubmission of the corrected invoice by the Contractor.

(iii) Interest penalties will not continue to accrue after the filing of a claim for such penalties under the clause at 52.233-1, Disputes, or for more than 1 year. Interest penalties of less than \$1.00 need not be paid.

(iv) Interest penalties are not required on payment delays due to disagreement between the Government and Contractor over the payment amount or other issues involving contract compliance, or on amounts temporarily withheld or retained in accordance with the terms of the contract. Claims involving disputes, and any interest that may be payable will be resolved in accordance with the clause at 52.233-1, Disputes.

(6) An interest penalty shall also be paid automatically by the designated payment office, without request from the Contractor, if a discount for prompt payment is taken improperly. The interest penalty will be calculated on the amount of discount taken for the period beginning with the first day after the end of the discount period through the date when the Contractor is paid.

(7) If this contract was awarded on or after October 1, 1989, a penalty amount, calculated in accordance with regulations issued by the Office of Management and Budget, shall be paid in addition to the interest penalty amount if the Contractor --

(i) Is owed an interest penalty;

(ii) Is not paid the interest penalty within 10 days after the date the invoice amount is paid; and

(iii) Makes a written demand, not later than 40 days after the date the invoice amount is paid, that the agency pay such a penalty.

(b) Contract Financing Payments.

(1) For purposes of this clause, if applicable, "contract financing payment," means a Government disbursement of monies to a Contractor under a contract clause or other authorization prior to acceptance of supplies or services by the Government, other than progress payments based on estimates of amount and value of work performed. Contract financing payments include advance payments.

(2) If this contract provides for contract financing, requests for Payment shall be submitted to the designated billing office as specified in this contract or as directed by the Contracting Officer. Contract financing payments shall be made on the (insert day as prescribed by Agency head; if not prescribed, insert 30th day) day after receipt of a proper contract financing request by the designated billing office. In the event that an audit or other review of a specific financing request is required to ensure compliance with the terms and conditions of the contract, the designated payment office is not compelled to make payment by the due date specified. For advance payments, loans, or other arrangements that do not involve recurrent submissions of contract financing requests, Payment shall be made in accordance with the corresponding contract terms or as directed by the Contracting Officer. Contract financing payments shall not be assessed an interest penalty for payment delays.

43. FAR 52.233-1, DISPUTES (DEC 1991) - ALTERNATE I (DEC 1991)

(a) This contract is subject to the Contract Disputes Act of 1978, as amended (41 U.S.C. 601-613).

(b) Except as provided in the Act, all disputes arising under or relating to this contract shall be resolved under this clause.

(c) "Claim," as used in this clause, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation contract terms, or other relief arising under or relating to this contract. A claim arising under a contract, unlike a claim relating to that contract, is a claim that can be resolved under a contract clause that provides for the relief sought by the claimant. However, a written demand or written assertion by the Contractor seeking the payment of money exceeding \$50,000 is not a claim under the Act until certified as required by subparagraph (d) (2) below. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a claim under the Act. The submission may be converted to a claim under the Act, by complying with the submission and certification requirements of this clause, if it is disputed either as to liability or amount or is not acted upon in a reasonable time.

(d) (1) A claim by the Contractor shall be made in writing and submitted to the Contracting Officer for a written decision. A claim by the Government against the Contractor shall be subject to a written decision by the Contracting Officer.

(2) For Contractor claims exceeding \$50,000, the Contractor shall submit with the claim a certification that--

(i) The claim is made in good faith;

(ii) Supporting data are accurate and complete to the best of the Contractor's knowledge and belief; and

(iii) The amount requested accurately reflects the contract adjustment for which the Contractor believes the Government is liable.

(3) (i) If the Contractor is an individual, the certification shall be executed by that individual.

(ii) If the Contractor is not an individual, the certification shall be executed by--

(A) A senior company official in charge at the Contractor's plant or location involved; or

(B) An officer or general partner of the Contractor having overall responsibility for the conduct of the Contractor's affairs.

(e) For Contractor claims of \$50,000 or less, the Contracting Officer must, if requested in writing by the Contractor, render a decision within 60 days of the request. For Contractor-certified claims over \$50,000, the Contracting Officer must, within 60 days, decide the claim or notify the Contractor of the date by which the decision will be made.

(f) The Contracting Officer's decision shall be final unless the Contractor appeals or files a suit as provided in the Act.

(g) At the time a claim by the Contractor is submitted to the Contracting Officer or a claim by the Government is presented to the Contractor, the parties, by mutual consent, may agree to use alternative means of dispute resolution procedures, any claim, regardless of amount, shall be accompanied by the certification described in paragraph (d) (3) of this clause.

(h) The Government shall pay interest on the amount found due and unpaid from (1) the date the Contracting Officer receives the claim (properly certified if required), or (2) the date payment otherwise would be due, if that date is later, until the date of payment. Simple interest on claims shall be paid at the rate, fixed by the Secretary of the Treasury as provided in the Act, which is applicable to the period during which--the Contracting Officer receives the claim and then at the rate applicable for each 6-month period as fixed by the Treasury Secretary during the pendency of the claim.

(i) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under or relating to the contract, and comply with any decision of the Contracting Officer.

#### 44. FAR 52.233-3, PROTEST AFTER AWARD (AUG 1989)

(a) Upon receipt of a notice of protest (as defined in 33.101 of the FAR) the Contracting Officer may, by written order to the Contractor, direct the Contractor to stop performance of the work called for by this contract. The order shall be specifically identified as a stop-work order issued under this clause. Upon receipt of the order; the Contractor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order during the period of work stop-page. Upon receipt of the final decision in the



protest, the Contracting Officer shall either--

(1) Cancel the stop-work order; or

(2) Terminate the work covered by the order as provided in the Default, or the Termination for Convenience of the Government, clause of this contract.

(b) If a stop-work order issued under this clause is canceled either before or after a final decision in the protest, the Contractor shall resume work. The Contracting Officer shall make an equitable adjustment in the delivery schedule or contract price, or both, and the contract shall be modified, in writing, accordingly, if--

(1) The stop-work order results in an increase in the time required for, or in the Contractor's cost properly allocable to, the performance of any part of this contract; and

(2) The Contractor asserts its right to an adjustment within 30 days after the end of the period of work stoppage; provided, that if the Contracting Officer decides the facts justify the action, the Contracting Officer may receive and act upon a proposal at any time before final payment under this contract.

(c) If a stop-work order is not canceled and the work covered by the order is terminated for the convenience of the Government, the Contracting Officer shall allow reasonable costs resulting from the stop-work order arriving at the termination settlement.

(d) If a stop-work order is not canceled and the work covered by the order is terminated for default, the Contracting Officer shall allow, by equitable adjustment or otherwise, reasonable costs resulting from the stop-work order.

(e) The Government's rights to terminate this contract at any time are not affected by action taken under this clause.

45. FAR 52.236-22, DESIGN WITHIN FUNDING LIMITATIONS (APR 1984)

(a) The Contractor shall accomplish the design services required under this contract so as to permit the award of a contract, using standard Federal Acquisition Regulation procedures for the construction of the facilities designed at a price that does not exceed the estimated construction contract price as set forth in paragraph (c) below. When bids or proposals for the construction contract are received that exceed the estimated price, the contractor shall perform such redesign and other services as are necessary to permit contract award within the funding limitation. These additional services shall be performed at no increase in the price of this contract. However, the Contractor shall not be required to perform such additional services at no cost to the Government if the unfavorable bids or proposals are the result of conditions beyond its reasonable control.

(b) The Contractor will promptly advise the Contracting Officer if it finds that the project being designed will exceed or is likely to exceed the funding limitations and it is unable to design a usable facility within these limitations. Upon receipt of such information, the Contracting Officer will review the Contractor's revised estimate of construction cost. The Government may, if it determines that the estimated construction contract price set forth in this contract is so low that award of a construction contract not in excess of such estimate is improbable, authorize a change in scope or materials as required to reduce the estimated construction cost to an amount within the estimated construction contract price set forth in paragraph (c) below, or the Government may adjust such estimated construction contract price. When bids or proposals are not solicited or are unreasonably delayed, the Government shall prepare an estimate of constructing the design submitted and such estimate shall be used in lieu of bids or proposals to determine compliance with the funding limitation.

(c) The estimated construction contract price for the project described in this contract is \$ (See Appendix A)

46. FAR 52.236-23, RESPONSIBILITY OF THE ARCHITECT-ENGINEER CONTRACTOR (APR 1984)

(a) The Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all designs, drawings, specifications, and other services furnished by the Contractor under this contract. The Contractor shall, without additional compensation, correct or revise any errors or deficiencies in its designs, drawings, specifications, and other services.

(b) Neither the Government's review, approval or acceptance of, nor payment for, the services required under this contract shall be construed to operate as a waiver of any rights under this contract or of any cause of action arising out of the performance of this contract, and the Contractor shall be and remain liable to the Government in accordance with applicable law for all damages to the Government caused by the Contractor's negligent performance of any of the services furnished under this contract.

(c) The rights and remedies of the Government provided for under this contract are in addition to any other rights and remedies provided by law.

(d) If the Contractor is comprised of more than one legal entity, each such entity shall be jointly and severally liable hereunder.

47. FAR 52.236-24, WORK OVERSIGHT IN ARCHITECT-ENGINEER CONTRACTS (APR 1984)

The extent and character of the work to be done by the Contractor shall be subject to the general oversight, supervision, direction, control, and approval of the Contracting Officer.

48. FAR 52.236-25, REQUIREMENTS FOR REGISTRATION OF DESIGNERS (APR 1984)

The design of architectural, structural, mechanical, electrical, civil, or other engineering features of the work shall be accomplished or reviewed and approved by architects or engineers registered to practice in the particular professional field involved in a State or possession of the United States, in Puerto Rico, or in the District of Columbia.

49. FAR 52.237-2, PROTECTION OF GOVERNMENT BUILDINGS, EQUIPMENT, AND VEGETATION (APR 1984)

The Contractor shall use reasonable care to avoid damaging existing buildings, equipment, and vegetation on the Government installation. If the Contractor's failure to use reasonable care causes damage to any of this property, the Contractor shall replace or repair the damage at no expense to the Government as the Contracting Officer directs. If the Contractor fails or refuses to make such repair or replacement, the Contractor shall be liable for the cost, which may be deducted from the contract price.

50. FAR 52.242-13, BANKRUPTCY (APR 1991)

In the event the Contractor enters in to proceedings relating to bankruptcy, whether voluntary or involuntary, the Contractor agrees to furnish, by certified mail, written notification of the bankruptcy to the Contracting Officer responsible for administering the contract. This notification shall be furnished within five days of the initiation of the proceedings relating to bankruptcy filing. This notification shall include the date on which the bankruptcy petition was filed, the identity of the court in which the bankruptcy petition was filed, and a listing of Government contract numbers and contracting officers for all Government contracts against which final payment has not been made. This obligation remains in effect until final payment under this contract.

51. FAR 52.243-1, CHANGES--FIXED-PRICE (AUG 1987) - ALTERNATE III (APR 1984)

(a) The Contracting Officer may at any time, by written order, and without notice to the sureties, if any, make changes within the general scope of this contract in the services to be performed.

(b) If any such change causes an increase or decrease in the cost of, or the time required for, performance of any part of the work under this contract, whether or not changed by the order, the Contracting Officer shall make an equitable adjustment in the contract price, the delivery schedule, or both, and shall modify the contract.

(c) The Contractor must assert its right to an adjustment under this clause within 30 days from the date of receipt of the written order. However, if the Contracting Officer decides that the facts justify it, Contracting Officer may receive and act upon a proposal submitted before

final payment of the contract.

(d) If the Contractor's proposal includes the cost of property made obsolete or excess by the change, the Contracting Officer shall have the right to prescribe the manner of the disposition of the property.

(e) Failure to agree to any adjustment shall be a dispute under the Disputes clause. However, nothing in this clause shall excuse the Contractor from proceeding with the contract as changed.

(f) No services for which an additional cost or fee will be charged by the Contractor shall be furnished without the prior written authorization of the Contracting Officer.

52. FAR 52.244-4 SUBCONTRACTORS AND OUTSIDE ASSOCIATES, AND CONSULTANTS (APR 1984)

Any subcontractors and outside associates or consultants required by the Contractor in connection with the services covered by the contract will be limited to individuals or firms that were specifically identified and agreed to during negotiations. The Contractor shall obtain the Contracting Officer's written consent before making any substitution for these subcontractors, associates, or consultants.

53. FAR 52.247-63, PREFERENCE FOR U.S.-FLAG AIR CARRIERS (APR 1984)

(a) "International air transportation," as used in this clause, means transportation by air between a place in the United States and a place outside the United States or between two places both of which are outside the United States.

"United States," as used in this clause, means the 50 States, the District of Columbia, the Commonwealth of Puerto Rico, and possessions of the United States.

"U.S.-flag air carrier," as used in this clause, means an air carrier holding a certificate under section 401 of the Federal Aviation Act of 1958 (49 U.S.C. 1371).

(b) Section 5 of the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. 1517) (Fly America Act) requires that all Federal agencies and Government contractors and subcontractors use U.S.-flag air carriers for U.S. Government-financed international air transportation of personnel (and their personal effects) or property, to the extent that service by those carriers is available. It requires the Comptroller General of the United States, in the absence of satisfactory proof of the necessity for foreign-flag air transportation, to disallow expenditures from funds, appropriated or otherwise established for the account of the United States, for international air transportation secured aboard a foreign-flag air carrier if a U.S.-flag air carrier is available to provide such services.

(c) The Contractor agrees, in performing work under this contract, to use U.S.-flag air carriers for international air transportation of personnel (and their personal effects) or property to the extent that service by those carriers is available.

(d) In the event that the Contractor selects a carrier other than a U.S.-flag air carrier for international air transportation, the Contractor shall include a certification on vouchers involving such transportation essentially as follows:

CERTIFICATION OF UNAVAILABILITY OF  
U.S.-FLAG AIR CARRIERS

I hereby certify that international air transportation of persons (and their personal effects) or property by U.S.-flag air carrier was not available or it was necessary to use foreign-flag air carrier service for the following reasons (see section 47.403 of the Federal Acquisition Regulation): [State reasons]: . . . . .

. . . . . (End of certification)

(e) The Contractor shall include the substance of this clause, including this paragraph (e), in each subcontract or purchase under this contract that may involve international air transportation.

54. FAR 52.248-2, VALUE ENGINEERING--ARCHITECT-ENGINEER (MAR 1990)

(a) General. The Contractor shall (1) perform value engineering (VE) services and submit progress reports as specified in the Schedule; and (2) submit to the Contracting Officer any resulting value engineering proposal (VEP'S). Value engineering activities shall be performed concurrently with and without delay to the schedule set for the in the contract. The services shall include VE evaluation and review and study of design documents immediately following completion of the 35 percent design state or at such stages as the Contracting Officer may direct. Each separately priced line item for VE services shall define specifically the scope of work to be accomplished and may include VE studies of items other than design documents. The Contractor shall be paid as the contract specifies for this effort but shall not share in savings which may result from acceptance and use of VEP's by the Government.

(b) Definitions. "Life cycle cost," as used in this clause, is the sum of all costs over the useful life of a building, system or product. It includes the cost of design, construction, acquisition, operation, maintenance, and salvage (resale) value, if any.

"Value engineering," as used in this clause, means an organized effort to analyze the functions of systems, equipment, facilities, services, and supplies for the purpose of achieving the essential functions at the lowest life cycle cost consistent with required performance, reliability, quality, and safety.

"Value engineering proposal," as used in this clause, means, in

connection with an A-E contract, a change proposal developed by employees of the Federal Government or contractor value engineering personnel under contract to an agency to provide value engineering services for the contract or program.

(c) Submissions. After award of an architect-engineering contract the contractor shall--

(1) Provide the Government with a fee breakdown schedule for the VE services (such as criteria review, task team review, and bid package review) included in the contract schedule;

(2) Submit, for approval by the Contracting Officer, a list of team members and their respective resumes representing the engineering disciplines required to complete the study effort, and evidence of the team leader's qualifications and engineering discipline. Subsequent changes or substitutions to the approved Ve term shall be submitted in writing to the Contracting Officer for approval; and

(3) The team leader shall be responsible for prestudy work assembly and shall edit, reproduce, and sign the final report and each VEP. All VEP's, even if submitted earlier as an individual submission, shall be contained n the final report.

(d) VEP preparation. As a minimum, the contractor shall include the following information in each VEP:

(1) A description of -the difference between the existing and proposed design, the comparative advantages and disadvantages of each, a justification when an item's function is being altered, the effect of the change on system or facility performance, and any pertinent objective test data.

(2) A list and analysis of design criteria or specifications that must be changed if the VEP is accepted.

(3) A separate detailed estimate of the impact on project cost of each VEP, if accepted and implementedby the Government.

(4) A description and estimate of costs the Government may incur in implementing the VEP, such as design change cost and test and evaluation cost.

(5) A prediction of any effects the proposed change may have on life cycle cost.

(6) The effect the VEP will have on design or construction schedules.

(e) VEP acceptance. Approved VEP's shall be implemented by bilateral modification to this contract.

55. FAR 52.249-7, TERMINATION (FIXED-PRICE ARCHITECT-ENGINEER)  
(APR 1984)

(a) The Government may terminate this contract in whole or, from time to time, in part, for the Government's convenience or because of the failure of the Contractor to fulfill the contract obligations. The Contracting Officer shall terminate by delivering to the Contractor a Notice of Termination specifying the nature, extent, and effective date of the termination. Upon receipt of the notice, the Contractor shall (1) immediately discontinue all services affected (unless the notice directs otherwise), and (2) deliver to the Contracting Officer all data, drawings, specifications, reports, estimates, summaries, and other information and materials accumulated in performing this contract, whether completed or in process.

(b) If the termination is for the convenience of the Government, the Contracting Officer shall make an equitable adjustment in the contract price but shall allow no anticipated profit on unperformed services.

(c) If the termination is for failure of the Contractor to fulfill the contract obligations, the Government may complete the work by contract or otherwise and the Contractor shall be liable for any additional cost incurred by the Government.

(d) If, after termination for failure to fulfill contract obligations, it is determined that the Contractor had not failed, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the Government.

(e) The rights and remedies of the Government provided in this clause are in addition to any other rights and remedies provided by law or under this contract.

56. FAR 52.251-1, GOVERNMENT SUPPLY SOURCES (APR 1984)

The Contracting Officer may issue the Contractor an authorization to use Government supply sources in the performance of this contract. Title to all property acquired by the Contractor under such an authorization shall vest in the Government unless otherwise specified in the contract. Such property shall not be considered to be "Government-furnished property," as distinguished from "Government property." The provisions of the clause entitled "Government Property," except its paragraphs (a) and (b), shall apply to all property acquired under such authorization.

57. FAR 52.252-2, CLAUSES INCORPORATED BY REFERENCE (JUL 1988)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available.

58. FAR 52.252-4, ALTERATIONS IN CONTRACT (APR 1984)

Portions of this contract are altered as follows:

59. FAR 52.252-6, AUTHORIZED DEVIATIONS IN CLAUSES (APR 1984)

(a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the date of the clause.

(b) The use in this solicitation or contract of any . . . . . [insert regulation name] (48 CFR . . . . .) clause with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

60. DFAR 252.201-7000, CONTRACTING OFFICER'S REPRESENTATIVE (DEC 1991)

(a) Definition.

"Contracting Officer's representative" means an individual designated in accordance with subsection 201.602-2 of the Defense Federal Acquisition Regulation Supplement and authorized in writing by the contracting officer to perform specific technical or administrative functions.

(b) If the Contracting Officer designates a contacting officer's representative (COR), the Contractor will receive a copy of the written designation. It will specify the extent of the COR's authority to act on behalf of the contracting officer. The COR is not authorized to make any commitments or changes that will affect price, quality, quantity, delivery, or any other term or condition of 'the contract.

61. DFAR 252.203-7000, STATUTORY PROHIBITIONS ON COMPENSATION TO FORMER DEPARTMENT OF DEFENSE EMPLOYEES (DEC 1991)

(a) Definitions.

As used in this clause--

(1) "Armed Forces" means the uniformed military services, excluding the U.S. Coast Guard.

(2) "Compensation" means any payment, gift, benefit, reward, favor, or gratuity which is provided directly or indirectly for services rendered by the person accepting such payment, gift, benefit, reward, favor, or gratuity, and which has a fair market value in excess of \$250. Compensation is indirectly provided if it is paid to an entity other than the individual, specifically in exchange for services performed by the individual.



(3) "Defense contractor" means an entity (including affiliates and subsidiaries which clearly engage in the performance of Department of Defense (DoD) contracts) that contracts directly with the DoD to supply goods or services. "Defense contractor" does not include a State or local government.

(4) "Designated agency ethics official" means a DoD officer or employee who has been appointed to administer the provisions of the Ethics in Government Act, as amended.

(5) "Former DoD employee" means a person who served in the DoD in a civilian position for which the rate of pay was equal to or greater than the minimum rate of pay for grade M-13 of the General Schedule, or served in the Armed Forces in a pay grade of 04 or higher.

(6) "Former DoD official" means--

(i) A former DoD employee who spent the majority of working days during the last two years of DoD service performing a procurement function relating to:

(A) A DoD contract, at a site or plant that was owned or operated by the Contractor, and which was the principal location of such person's performance of that procurement function; or

(B) A major defense system and, in the performance of such function, participated on any occasion personally and substantially in a manner involving decision making responsibilities with respect to a contract for that system through contact with the Contractor;

(ii.) An individual who served in a civilian position for which the rate of pay is equal to or greater than the minimum rate of pay for a Senior Executive Service position or other executive position at the same or higher level, and an individual who served in the Armed Forces in the pay grade of 07 or higher, if such individual during the last two years of DoD service--

(A) Acted as one of the primary Government representatives in the negotiation with a defense contractor of a DoD contractual action in an amount in excess of \$10 million; or

(B) Acted as one of the primary Government representatives in the negotiation of a settlement of an unresolved claim of such a defense contractor in an amount in excess of \$10 million. An unresolved claim shall be, for the purposes of this section, valued by the greater of the amount of the claim or the amount of the settlement.

(7) "Major defense contractor" means any business entity which, during the Government fiscal year preceding the Government fiscal year in which compensation was first provided to a former DoD employee, was awarded DoD contracts in a total amount of \$10 million or more.

(8) "Major defense system" means a combination of elements that will function together to produce the capability required to fulfill a

mission need. Elements may include hardware, equipment, software, or any combination thereof, but exclude construction or other improvements to real property. A system shall be considered a major defense system if--

(i) The DoD is responsible for the system and the total expenditures (based on fiscal year 1980 constant dollars) for research, development, test and evaluation for the system, are estimated to exceed \$75 million or the eventual total expenditure for procurement is estimated to exceed \$300 million; or

(ii) The system is designated a major system by the head of the agency responsible for the system.

(9) "Negotiation" means exchanges of positions between representatives of the Government and a contractor with the view of reaching agreement regarding respective liabilities of the parties on a particular contract or claim. It includes deliberations regarding contract specifications, terms of delivery, allowability of cost, pricing of change orders, etc.

(10) "Primary Government representative" means, if more than one government representative is involved in any particular transaction, the official or officials supervising the Government's effort in the matter. To -act as a "representative" requires personal and substantial participation in the transaction, by personal presence, telephone conversation, or similar involvement with representatives of a contractor.

(11) "Procurement-related function" (or "procurement function") means any function relating to--

(i) The negotiation, award, administration, or approval of a contract;

(ii) The selection of a contractor;

(iii) The approval of a change in a contract;

(iv) The performance of quality assurance, operational and developmental testing, the approval of payment, or auditing under a contract; or

(v) The management of a procurement program.

(b) Prohibition on compensation.

(1) 10 U.S.C. 2397b and 2397c prohibit a major defense contractor from offering or providing any compensation valued in excess of \$250 to a former DoD official who left DoD service on or after April 16, 1987, and who, while employed by DoD, performed procurement-related functions in connection with that defense contractor. This prohibition runs for the two year period beginning on the date of the official's separation from service in DoD.

(2) The Contractor, if a major defense contractor, agrees not to

provide, for the two year period, any compensation to the former DoD official.

(3) DoD employees may request from their Designated Agency Ethics Official (DAEO) a written opinion on the applicability of 10 U.S.C. 2397b prior to the acceptance of compensation. If the opinion of the DAEO is that the law is not applicable, and that the individual may accept compensation from the Contractor, there shall be a conclusive presumption that the offering and the acceptance of such compensation is not a violation of the statute.

(c) Report concerning former DoD employees.

(1) The Contractor shall submit a separate written report, as described in paragraph (c)(2) of this clause, for each calendar year covered by this contract (extending through final payment) if the calendar year commenced after the end of a Government fiscal year in which the Contractor was awarded one or more DoD contracts aggregating \$10 million or more. In multidivisional corporations, the corporate headquarters, and each segment which contracts directly with the Government shall report separately. Each report shall list those persons employed or otherwise compensated, who are former DoD employees who left service on or after April 16, 1987, if--

(i) They were compensated by the Contractor during the reporting period; and

(ii) The compensation was provided within two years after the person left service in the DoD.

(2) The report shall contain:

(i) Each person's name and the agency in which the person was employed or served on active duty during the last two years of service with DoD;

(ii) Each person's job title(s) during the last two years of service with DoD, and a list of major defense systems on which each person performed any work;

(iii) A complete description (exclusive of proprietary information) of any work that each person is performing, or did perform, on behalf of the Contractor during the calendar year covered by the report. If the work is classified, the Contractor may use a generalized description which will not compromise its classified nature;

(iv) An identification of each major defense system on which each individual has performed any work on behalf of the Contractor.

(3) Submit each report not later than April 1 of the year following the end of the calendar year for which the report is being made. Send reports to the Office of the Assistant General Counsel (Legal Counsel), Standards of Conduct Office, ATTN: OAGC/LC, Pentagon, Washington, DC 20301-1600.

(4) A properly executed DD Form 1787 (Employment, Report of DoD and Defense Related) may be submitted to satisfy the reporting requirement as to any single person.

(5) The Contractor need not submit duplicate reports to the Government. Submission of a report meeting the requirements of this clause, under another, concurrent contract with DoD will satisfy the reporting requirement of this contract.

(d) Penalties for failure to comply.

(1) Civil fines. A Contractor who knowingly offers or provides any compensation to a former DoD official in violation of the statute, and who knew or should have known that the acceptance of such compensation would be in violation of such statute, shall be subject to a civil fine, not to exceed \$500,000.

(2) Liquidated damages.

(i) For each knowing violation of the statutory prohibition on providing compensation, the Contractor agrees to pay to the Government as liquidated damages the greater of either \$100,000, or three times the total amount of compensation paid by the Contractor to the former DoD official during the period in which such compensation was in violation of the statutory prohibition.

(ii) Liability for liquidated damages under this clause survives final payment under this contract and may be recouped against payments due under other contracts with the Contractor.

(iii) Liquidated damages will be computed based upon the number of actual violations by the Contractor, and not on the number of contracts in which this clause appears.

(3) Administrative penalty. If the Contractor knowingly fails to file a report in accordance with paragraph (c) of this clause, the Contractor shall be subject to an administrative penalty not to exceed \$10,000. The final determination of the penalty to be charged to the Contractor shall be made by the Secretary of Defense or designee after the Contractor is afforded an opportunity for an agency hearing on the record in accordance with agency hearing procedures. The Secretary's determination shall form a part of the record and shall be subject to judicial review under Chapter 7 of Title 5 United States Code.

(e) The rights and remedies under this clause are in addition to, and do not limit, any rights afforded the Government under this contract or as otherwise provided by law.

62. DFAR 252.203-7001, SPECIAL PROHIBITION ON EMPLOYMENT  
(APR 1993)

(a) Definitions. As used in this clause--

(1) "Arising out of a contract with the DoD" means any act in connection with--

(i) Attempting to obtain,

(ii) Obtaining, or

Performing a contract or first-tier subcontract of any agency, department, or component of the Department of Defense (DoD).

(2) "Conviction of fraud or any other felony" means any conviction for fraud or a felony in violation of state or Federal criminal statutes, whether entered on a verdict or plea, including a plea of nolo contendere, for which sentence has been imposed.

(3) "Date of conviction" means the date judgment was entered against the individual.

(b) 10 U.S.C. 2408 provides that any individual who is convicted after September 29, 1988, of fraud or any other felony arising out of a contract with the DoD is prohibited from:

(1) Working in a management or supervisory capacity on any DoD contract or first-tier subcontracts;

(2) Serving on the board of directors of any DoD contractor or first-tier subcontractor; or

Serving as a consultant to any DoD contractor or first-tier subcontractor.

(c) Unless waived, the prohibition in paragraph (b) applies for five years from the date of conviction.

(d) 10 U.S.C. 2408 further provides that a defense contractors or first-tier subcontractors shall be to a criminal penalty of not more than \$500,000 if they are convicted of knowingly--

(1) Employing a person under a prohibition specified in paragraph (b) of this clause; or

(2) Allowing such person to serve on the board of directors of the contractor or first-tier subcontractor.

(e) In addition to the criminal penalties contained in 10 U.S.C. 2408, the Government may consider other available remedies, such as--

(1) Suspension or debarment;

(2) Cancellation of the contract at no cost to the Government; or

(3) Termination of the contract for default.

(f) The Contractor may submit written requests for waiver of the

prohibitions in paragraph (b) of this clause to the Contracting Officer. Requests shall clearly identify--

- (1) The person involved;
- (2) The nature of the conviction and resultant sentence or punishment imposed;
- (3) The reasons for the requested waiver; and,
- (4) An explanation of why a waiver is in the interest of national security.

(g) The Contractor agrees to include the substance of this clause, appropriately modified to reflect the identity and relationship of the parties, in all first-tier subcontracts exceeding \$25,000.

(h) Pursuant to 10 U.S.C. 2408(c), defense contractors and subcontractors may obtain information as to whether a particular person has been convicted of fraud or any other felony arising out of a contract with the DoD by contacting the The Officer of Justice Programs, The Denial of Benefits Office, U.S. Department of Justice, telephone (202) 307-1065.

63. DFAR 252.203-7003, PROHIBITION AGAINST RETALIATORY PERSONNEL ACTIONS (APR 1992)

(a) Definitions. As used in this clause--

- (1) "Appropriate Government official" means
  - (i) An officer or employee of the Department of Defense responsible for command, direct staff assistance to a commander, contract administration, program management, audit, inspection, investigation, or enforcement of any law or regulation relating to Government procurement or the subject matter of the contract;
  - (ii) a Member of congress or an officer or employee of Congress, the General Accounting Office, the Congressional Budget Office, or the Office of Technology Assessment; and
  - (iii) Any other officer or employee of the United States whose duties include the investigation or enforcement of any law, rule, or regulation relating to Government procurement or the subject matter of the contract.
- (2) "Information concerning a contract" means information about cost, price, compliance with specifications, meeting the user's requirements, user safety, use or disposition of services, real property or personal property acquired under the contract, the procurement process (including competition, negotiation, award, and administration), and relationships with Government personnel, competitors, or subcontractors.

(b) Prohibition.

In accordance with 10 U.S.C. 2409a, the Contractor shall not discharge or otherwise discriminate against any employee with respect to the employee's compensation or terms and conditions of employment because the employee (or any person acting pursuant to a request of the employee) discloses to an appropriate Government official information concerning a defense contract, which information the employee reasonably believes evidences a violation of any Federal law or regulation relating to defense procurement or the subject matter of this contract.

(c) the Government will notify the Contractor upon receipt of any complaint filed under the provisions of this clause and Subpart 203.71 of the Defense FAR Supplement. the Contractor agrees to cooperate with the Government during its investigation of any such complaint.

(d) The Contractor shall inform all employees of--

- (1) The prohibitions of this clause;
- (2) Employees' rights under 10 U.S.C. 2409a; and
- (3) availability of procedures implementing the statute.

64. DFAR 252.204-7000, DISCLOSURE OF INFORMATION (DEC 1991)

(a) The Contractor shall not release to anyone outside the Contractor's organization any unclassified information, regardless of medium (e.g., film, tape, document), pertaining to any part of this contract or any program related to this contract, unless--

- (1) the Contracting Officer has given prior written approval; or
- (2) the information is otherwise in the public domain before the date of release.

(b) Requests for approval shall identify the specific information to be released, the medium to be used, -and the purpose for the release. The Contractor shall submit its request to the Contracting Officer at least 45 days before the proposed date for release.

(c) The Contractor agrees to include a similar requirement in each subcontract under this contract. subcontractors shall submit requests for authorization to release through the prime contractor to the contracting Officer.

65. DFAR 252.204-7003, CONTROL OF GOVERNMENT PERSONNEL WORK PRODUCT (APR 1992)

The Contractor's procedures for protecting against unauthorized disclosure of information shall not require Department of Defense employees or members of the Armed forces to relinquish control of their work products, whether classified or not, to the Contractor.

66. DFAR 252.215-7000, PRICING ADJUSTMENT (DEC 1991)

The term "pricing adjustment" as used in paragraph (a) of the clauses entitled "Price Reduction for Defective Cost or Pricing Data - Modifications," "Subcontractor Cost or Pricing Data," and "Subcontractor Cost or Pricing Data - Modifications," means the aggregate increases and/or decreases in cost plus applicable profits.

67. DFAR 252,215-7002, COST ESTIMATING SYSTEM REQUIREMENTS (DEC 1991)

(a) Definition.

"Estimating system" means the Contractor's policies, procedures, and practices for generating estimates of costs and other data included in proposals submitted to customers in the expectation of receiving contract awards. Estimating system includes the Contractor's--

- (1) Organizational structure;
- (2) Established lines of authority, duties, and responsibilities;
- (3) Internal controls and managerial reviews;
- (4) Flow of work, coordination, and communication; and
- (5) Estimating methods, techniques, accumulation of historical cost, and other analyses used-to- generate cost estimates.

(b) General.

(1) The Contractor shall establish, maintain, and comply with an estimating system that is consistently applied and produces reliable, verifiable, supportable, and documented cost estimates that are an acceptable basis for negotiation of fair and reasonable prices.

(2) The system should be--

(i) Consistent and integrated with the Contractor's related management systems; and

(ii) Subject to applicable financial control systems.

(c) Applicability.

Paragraphs (d) and (e) of this clause apply if the contractor is a large business and either--

(1) In its fiscal year preceding award of this contract, received Department of Defense (DoD) prime contracts or subcontracts, totaling \$50 million or more for which certified cost or pricing data were required; or

(2) In its fiscal year preceding award of this contract---



(i) Received DoD prime contracts or subcontracts totaling \$10 million or more (but less than \$50 million) for which certified cost pricing data were required; and

(ii) Was notified in writing by the Contracting Officer that paragraphs (d) and (e) of this clause apply.

(d) System requirements.

(1) the Contractor shall disclose its estimating system to the Administrative Contracting Officer (ACO) in writing. If the Contractor wishes the government to protect the information as privileged or confidential, the Contractor must mark the documents with the appropriate legends before submission.

(2) An estimating system disclosure is adequate when the Contractor has provided the ACO with documentation which--

Accurately describes those policies, procedures, and practices that the Contractor currently uses in preparing cost proposals; and

(ii) Provides sufficient detail for the Government to reasonably make an informed judgment regarding the adequacy of the contractor's estimating practices.

(3) The Contractor shall--

(i) comply with its disclosed estimating system; and

(ii) disclose significant changes to the cost estimating system to the ACO on a timely basis.

(e) Estimating system deficiencies.

(1) the Contractor shall respond to a written report from the Government which identifies deficiencies in the Contractor's estimating system as follows:

If the Contractor agrees with the report findings and recommendations, the Contractor shall--

(A) Within 30 days, state its agreement in writing; and

(B) Within 60 days, correct the deficiencies or submit a corrective action plan showing proposed milestones and actions leading to elimination of the deficiencies.

(ii) If the Contractor disagrees with the report, the Contractor shall, within 30 days, state its rationale for disagreeing..

(2) The ACO will evaluate the Contractor's response and notify the Contractor of the determination concerning remaining deficiencies and/or the adequacy of any proposed or completed corrective action.

<8. DFAR 252.223-7004, DRUG-FREE WORK FORCE (SEP 1988)

(a) Definitions.

(1) "Employee in a sensitive position," as used in this clause, means an employee who has been granted access to classified information; or employees in other positions that the Contractor determines involve national security, health or safety, or functions other than the foregoing requiring a high degree of trust and confidence.

(2) "Illegal drugs," as used in this clause, means controlled substances included in Schedules I and II, as defined by section 802(6) of Title 21 of the United States Code, the possession of which is unlawful under Chapter 13 of that Title. The term "illegal drugs" does not mean the use of a controlled substance pursuant to a valid prescription or other uses authorized by law.

(b) the Contractor agrees to institute and maintain a program for achieving the objective of a drug-free work force. While this clause defines criteria for such a program, contractors are encouraged to implement alternative approaches comparable to the criteria in paragraph (c) that are designed to achieve the objectives of this clause.

(c) Contractor programs shall include the following, or appropriate alternatives:

(1) Employee assistance programs emphasizing high level direction, education, counseling, rehabilitation, and coordination with available community resources;

(2) Supervisory training to assist in identifying and addressing illegal drug use by Contractor employees;

(3) Provision for self-referrals as well as supervisory referrals to treatment with maximum respect for individual confidentiality consistent with safety and security issues;

(4) Provision for identifying illegal drug users, including testing on a controlled and carefully monitored basis. Employee drug testing programs shall be established taking account of the followings:

(i) The Contractor shall establish a program that provides for testing for the use of illegal drugs by employees in sensitive positions. The extent of and criteria for such testing shall be determined by the Contractor based on considerations that include the nature of the work being performed under the contract, the employee's duties, the efficient use of Contractor resources, and the risks to health, safety, or national security that could result from the failure of an employee adequately to discharge his or her position.

(ii) In addition, the Contractor may establish a program for employee drug testing--

(A) When there is a reasonable suspicion that an

employee uses illegal drugs; or

(B) When an employee has been involved in an accident or unsafe practice;

(C) As part of or as a follow-up to counseling or rehabilitation for illegal drug use;

(D) As part of a voluntary employee drug testing program.

(iii) The Contractor may establish a program to test applicants for employment for illegal drug use.

(iv) For the purpose of administering this clause, testing for illegal drugs may be limited to those substances for which testing is prescribed by section 2.1 of Subpart B of the "Mandatory Guidelines for Federal Workplace Drug Testing Programs" (53 FR 11980 (April 11, 1988)), issued by the Department of Health and Human Services.

(d) Contractors shall adopt appropriate personnel procedures to deal with employees who are found to be using drugs illegally. Contractors shall not allow any employee to remain on duty or perform in a sensitive position who is found to use illegal drugs until such time as the Contractor, in accordance with procedures established by the Contractor, determines that the employee may perform in such a position.

(e) the provisions of this clause pertaining to drug testing programs shall not apply to the extent they are inconsistent with state or local law, or with an existing collective bargaining agreement; provided that with respect tot the latter, the Contractor agrees that those issues that are in conflict will be a subject of negotiation at the next collective bargaining session.

69. DFAR 252.227-7022, GOVERNMENT RIGHTS (UNLIMITED) (MAR 1979)

The Government shall have unlimited rights, in all drawings, designs, specifications, notes and other works developed in the performance of this contract, including the right to use same on any other Government design or construction without additional compensation to the Contractor. The Contractor hereby grants to the Government a paid-up license throughout the world to all such works to which he may assert or establish any claim under design patent or copyright laws. The Contractor for a period of three (3) years after completion of the project agrees to furnish the original or copies of all such works on the request of the Contracting Officer.

70. DFAR 252,227-7023, DRAWINGS AND OTHER DATA TO BECOME PROPERTY OF GOVERNMENT (MAR 1979)

All designs, drawings, specifications, notes and other works developed in the performance of this contract shall become the sole property of the Government and may be used on any other design or construction without

additional compensation to the Contractor. The Government shall be considered the "person for whom the work was prepared" for the purpose of authorship in any copyrightable work under 17 U.S.C. 201(b). With respect thereto, the Contractor agrees not to assert or authorize others to assert any rights nor establish any claim under the design patent or copyright laws. the Contractor for a period of three (3) years after completion of the project agrees to furnish all retained works on the request of the Contracting Officer. Unless otherwise provided in this contract, the Contractor shall have the right to retain copies of all works beyond such period.

71. DFAR 52.227-7024, NOTICE AND OF APPROVAL OF RESTRICTED DESIGNS (APR 1984)

In the performance of this contract, the Contractor shall, to the extent practicable, make maximum use of structures, machines, products, materials, construction methods, and equipment that are readily available through Government or competitive commercial channels, or through standard or proven production techniques, methods, and processes. Unless approved by the Contracting Officer, the Contractor shall not produce a design or specification that requires in the construction work the use of structures, products, materials, construction equipment, or processes that are known by the Contractor to be available only from a sole source. The Contractor shall promptly report any such design or specification to the Contracting Officer and give the reason why it is considered necessary to so restrict the design or specification.

72. DFAR 252.231-7000, SUPPLEMENTAL COST PRINCIPLES (DEC 1991)

When the allowability of costs under this contract is determined in accordance with Subpart 31 of the Federal Acquisition Regulation (FAR), allowability shall also be determined in accordance with Part..231 of the Defense FAR Supplement, in effect at the date of this contract.

73. DFAR 252.232-7006, REDUCTION OR SUSPENSION OF CONTRACT PAYMENTS UPON FINDING OF FRAUD (JAN 1992)

(a) 10 U.S.C. 2307(e) permits the head of the agency to reduce or suspend advance, partial, or progress payments upon a written determination by the agency head that substantial evidence exists that the Contractor's request for payment is based on fraud. The provisions of 10 U.S.C. 2307(e) are in addition to any other rights or remedies provided the Government by law or under contract.

(b) Actions taken by the Government under 10 U.S.C. 2307(e) shall not constitute an excusable delay under the Default clause of this contract or otherwise relieve the Contractor of its obligations to perform under this contract.

74. DFAR 252.233-7000, CERTIFICATION OF CLAIMS AND REQUESTS FOR ADJUSTMENT OR RELIEF (APR 1993)

(a) Any contract claim, request for equitable adjustment to contract terms, request for relief under Pub. L. 85-804, or other similar request exceeding \$100,000 shall bear, at the time of submission, the following certificate given by an individual who has knowledge of the basis of the claim or request, knowledge of the accuracy and completeness of the supporting data, and knowledge of the claim or request:

I certify that the claim is made in good faith, that the supporting data are accurate and complete to the best of my knowledge and belief; and that the amount requested accurately reflects the contract adjustment for which the Contractor believes the Government is liable; and that I am duly authorized to bind the contractor with respect to the claim.

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(Official's Name)

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(Title)

(b) The certification in paragraph (a) of this clause requires full disclosure of all relevant facts, including cost and pricing data.

(c) The certification requirement in paragraph (a) of this clause does not apply to:

(1) Requests for routine contract payments; for example, those for payment for accepted supplies and services, routine vouchers under cost-reimbursement type contracts, and progress payment invoices; or

(2) Final adjustments under incentive provisions of contracts.

(d) In those situations where no claim certification for the purposes of 10 U.S.C. 2410e has been submitted prior to the inception of a contract dispute, a single certification, using the language prescribed by the Contract Disputes Act (41 U.S.C. 601 et seq.) but signed by an individual who has knowledge of the basis of the claim or request, knowledge of the accuracy and completeness of the supporting data, and knowledge of the claim or request, will satisfy the certification requirements of both statutes.

(e) If this is a request for equitable adjustment under a substantially completed contract or a completed contract, the certification will be expanded to include the following:

This claim includes only costs for performing the alleged change, and does not include any costs which have already been reimbursed or which have been separately claimed. All indirect costs claimed are properly allocable to the alleged change in accordance with applicable acquisition regulations. I am aware that the submission of a false claim to the Government can result in the assessment of significant criminal and civil penalties and fines.

75. DFAR 252.236-7009, OPTION FOR SUPERVISION AND INSPECTION SERVICES  
(DEC 1991)

(a) The Government may--

(1) At its option, direct the Contractor to perform any part or all of the supervision and inspection services for the construction contract as provided under Appendix A of this contract; and

(2) Exercise its option, by written order, at any time prior to six months after satisfactory completion and acceptance of the work under this contract.

(b) Upon receipt of the Contacting Officer's written order, the Contractor shall proceed with the supervision and inspection services.

76. DFAR 252.242-7000, POSTAWARD CONFERENCE (DEC 1991)

The Contractor agrees to attend any postaward conference convened by the contracting activity or contract administration office in accordance with Federal Acquisition Regulation Subpart 42.5.

77. DFAR 252.242-7001, CERTIFICATION OF INDIRECT COSTS (DEC 1991)

(a) The Contractor shall--

(1) Certify any proposal to establish or modify billing rates or to establish final indirect cost rates;

(2) Use the format in paragraph (c) of this clause to certify;  
and

(3) Have the certificate signed by an individual of the Contractor's organization at a level no lower than a vice president or chief financial officer of the business segment of the Contractor that submits the proposal.

(b) Failure by the Contractor to submit a signed certificate, as described in this clause; shall result in payment of indirect costs at rates unilaterally established by the Government.

(c) The certificate of indirect costs shall read as follows:

CERTIFICATE OF INDIRECT COSTS

This is to certify that to the best of my knowledge and belief:

1. I have reviewed this indirect cost proposal;

2. All costs included in this proposal \_\_\_\_\_ (identify proposal and date) \_\_\_\_\_ to establish billing or final indirect cost rates for \_\_\_\_\_ (identify period covered by rate) \_\_\_\_\_ are allowable in accordance with the requirements of contracts to which they apply and with the cost principles of the Department of Defense applicable to those contracts;

3. this proposal does not include any costs which are unallowable under applicable cost principles of the Department of Defense, such as (without limitation): advertising and public relations costs, contributions and donations, entertainment cost, fines and penalties, lobbying costs, defense of fraud proceedings, and goodwill; and

4. All costs included in this proposal are properly allocable to Defense contracts on the basis of a beneficial or causal relationship between the expenses incurred and the contracts to which they are allocated in accordance with applicable acquisition regulations.

I declare under penalty of perjury that the foregoing is true and correct.

Firm: \_\_\_\_\_

Signature \_\_\_\_\_

Name of Corporation Official: \_\_\_\_\_

Title: \_\_\_\_\_

Date of Execution: \_\_\_\_\_

78. DFAR 252.243-7000, ENGINEERING-CHANGE PROPOSALS (AUG 1992)

(a) The Contracting Officer may ask the Contractor to prepare engineering change proposals for engineering changes within the scope of this contract. Upon receipt of a written request from the Contracting Officer, the Contractor shall prepare and submit an engineering change proposal in accordance with the instructions of \_\_\_\_\_ in effect on the date of contract award.

(b) The Contractor may initiate engineering change proposals. Contractor initiated engineering change proposals shall include a "not to exceed" price\*\* or a "not less than" price\*\* and delivery adjustment. If the Contracting Officer orders the engineering change, the increase shall not exceed nor the decrease be less than the "not to exceed" or "not less than" amounts\*\*\*.

(c) When the price\*\* of the engineering change is \$500,000 or more, the Contractor shall submit

(1) A completed SF 1411, Contract Pricing Proposal Cover Sheet, and

(2) At the time of agreement on price\*\*, a signed Certificate of Current Cost or Pricing Data.

\* Insert MIL-STD-480 or MIL-STD-481

\*\* Use a term suitable for the type of contract

\*\*\* In cost reimbursement type contracts, replace this sentence with the following: "Change orders issued under the Changes clause of this contract are not an authorization to exceed the estimated cost in the schedule unless there is a statement in the change order, or other contract modification, increasing the estimated cost."

79. DFAR 52.243-7001, PRICING OF CONTRACT MODIFICATIONS (DEC 1991)

When costs are a factor in any price adjustment under this contract, the contract cost principles and procedures in FAR Part 31 and DFARS Part 231, in effect on the date of this contract, apply.

80. DFAR 252.247-7023, TRANSPORTATION OF SUPPLIES BY SEA (DEC 1991)

As used in this clause--

(1) "Components" means articles, materials, and supplies incorporated directly into end products at any level of manufacture, fabrication, or assembly by the Contractor or any subcontractor..

(2) "Department of Defense" (DoD) means the Army, Navy, Air Force, Marine Corps, and defense agencies.

(3) "Foreign flag vessel" means any vessel that is not a U.S.-flag vessel.

(4) "Ocean transportation" means any transportation aboard a ship, vessel, boat, barge, or ferry through international waters.

(5) "Subcontractor" means a supplier, materialman, distributor or vendor at any level below the prime contractor whose contractual obligation to perform results from, or is conditioned upon, award of the prime contract and who is performing any part of the work or other requirement of the prime contract.

(6) "Supplies" means all property, except land and interests in land, the is clearly identifiable for-eventual use by or owned by the DoD at the time of transportation by sea.

(i) An item is clearly identifiable for eventual use by the DoD if, for example, the contract documentation contains a reference to a DoD contract number or a military destination.

(ii) "Supplies" includes (but is not limited to) public works; buildings and facilities; ships; floating equipment and vessels of every character, type, and description, with parts, subassemblies, accessories, and equipment; machine tools; material; equipment; stores of all kinds; end items; construction materials; and the components of the foregoing.

(7) "U.S.-flag vessel" means a vessel of the United States or belonging to the United States, including any vessel registered or having



national status under the laws of the United States.

(b) The Contractor shall employ U.S.-flag vessels in the transportation by sea of any supplies to be furnished in the performance of this contract. The Contractor and its subcontractors may request that the Contracting Officer authorize shipment in foreign-flag vessels, or designate available U.S.-flag vessels, if the Contractor or a subcontractor believes that--

(1) U.S.-flag vessels are not available for timely shipment;

(2) The freight charges are inordinately excessive or unreasonable; or

(3) Freight charges are higher than charges to private persons for transportation of like goods.

(c) The Contractor must submit any request for use of other than U.S.-flag vessels in writing to the Contracting Officer at least 45 days prior to the sailing date necessary to meet its delivery schedules. The Contracting Officer will process requests submitted after such date(s) as expeditiously as possible, but the Contracting Officer's failure to grant approvals to meet the shipper's sailing date will not of itself constitute a compensable delay under this or any other clause of this contract. Requests shall contain at a minimum--

(1) Type, weight, and cube of cargo;

(2) Required shipping date;

(3) Special handling and discharge requirements;

(4) Loading and discharge points;

(5) Name of shipper and consignee;

(6) Prime contract number;-and

(7) A documented description of efforts made to secure U.S.-flag vessels, including points of contact (with names and telephone numbers) with at least two U.S.-flag carriers contacted. Copies of telephone notes, telegraphic and facsimile message or letters will be sufficient for this purpose.

(d) the Contractor shall, within 30 days after each shipment covered by this clause, provide the Contracting Officer and the Division of National Cargo, Office of Market Development, Maritime Administration, U.S. Department of Transportation, Washington, DC 20590, one copy of the rated on board vessel operating carrier's ocean bill of lading, which shall contain the following information--

(1) Prime contract number;

(2) Name of vessel;

- (3) Vessel flag of registry;
- (4) Date of loading;
- (5) Port of loading;
- (6) Port of final discharge;
- (7) Description of commodity;
- (8) Gross weight in pounds and cubic feet if available;
- (9) Total ocean freight in U.S. dollars; and
- (10) Name of the steamship company.

(e) The Contractor agrees to provide with its final invoice under this contract a representation that to the best of its knowledge and belief--

- (1) No ocean transportation was used in the performance of this contract;
- (2) Ocean transportation was used and only U.S. -flag vessels were used for all ocean shipments under the contract;
- (3) Ocean transportation was used, and the Contractor had the written consent of the Contracting Officer for all non-U.S-flag ocean transportation; or
- (4) Ocean transportation was used and some or all of the shipments were made on non-U.S. -flag vessels without the written consent of the Contracting Officer. The Contractor shall describe these shipments in the following format:

ITEM DESCRIPTION	CONTRACT LINE ITEMS	QUANTITY
TOTAL		

(f) If the final invoice does not include the required representation, the Government will reject and return it to the Contractor as an improper invoice for the purposes of the Prompt Payment clause of this contract. IN the event there has been unauthorized use of non-U.S.-flag vessels in the performance of this contract, the Contracting Officer is entitled to equitably adjust the contract, based on the unauthorized use.

(g) The Contractor shall include this clause, including this paragraph (g) in all subcontracts under this contract, which exceed the small purchase limitation of section 13.000 of the Federal Acquisition Regulation.

III. ADDITIONAL CLAUSES

81. 5252.201-9300, CONTRACTING OFFICER AUTHORITY (AUG 1991)

In no event shall any understanding or agreement between the Contractor and any Government employee other than the Contracting Officer on any contract, modification, change order, letter or verbal direction to the Contractor be effective or binding upon the Government. All such actions must be formalized by a proper contractual document executed by an appointed Contracting Officer. The Contractor is hereby put on notice that in the event a Government employee other than the Contracting Officer directs a change in the work to be performed or increases the scope of the work to be performed, it is the Contractor's responsibility to make inquiry of the Contracting Officer before making the deviation. Payments will not be made without being authorized by an appointed Contracting Officer with the legal authority to bind the Government.

82. 5252.209-9300, ORGANIZATIONAL CONFLICTS OF INTEREST (DEC 1991)

The restriction described herein shall apply to the Contractor and its affiliates, consultants and subcontracts under this contract. If the Contractor under this contract prepares or assists in preparing a statement of work, specifications and plans, the Contractor and its affiliates shall be ineligible to bid or participate, in any capacity, in any contractual effort which is based on such statement of work or specifications and plans as a prime contractor, subcontractor, consultant or in any similar capacity. The Contractor shall not incorporate its products or services such statement of work or specification unless so directed in writing by the Contracting Officer, in which case the restriction shall not apply. This contract shall include this clause in its subcontractor's or consultants' agreements concerning the performance of this contract.

83. 5252.211-9300, COMMERCIAL WARRANTY (AUG 1991)

The Contractor agrees that the supplies or services furnished under this contract shall be covered by the most favorable commercial warranties the Contractor gives to any customer for such supplies or services and that the rights and remedies provided herein are in addition to and do not limit any rights afforded to the Government by any other clause of this contract.

84. 5252.216-9300, APPOINTMENT OF ORDERING OFFICER(S) (AUG 1991)

Any duly appointed Contracting Officer of the "procuring" and/or "administering" department or agency may execute deliver orders under this contract provided the total price of the delivery order does not exceed the individual Contracting Officer(s) warrant limitations.

85. 5252.216-9301, DELIVER ORDER TERMS AND CONDITIONS [A/E INDEFINITE QUANTITY CONTRACTS] (AUG 1991)

At the sole option of the Government, and in accordance with all terms and conditions set forth herein, the Architect-Engineer may be authorized to perform either partial or total design engineering and related services on variable projects covered by this contract. Authorization for performance of these services shall be by issuance of a delivery order which shall be executed as follows:

a. the Government shall have the right, at any time during the term of this contract, to issue requests for proposals from the Architect-Engineer for furnishing specified design, engineering and related services for projects. Each request for proposal will set out the proposed scope of work, design criteria and other considerations, scope of Architect-Engineer services, proposed schedule of submissions, and, if applicable, the estimated construction cost amount (ECC) for the project contemplated.

b. the Government reserves the right to make award on initial proposal. However, if the proposal is not acceptable as submitted, the parties hereto shall enter into negotiations, targeting a mutually acceptable agreement. If agreement on all terms is not achievable, the services for that specific order shall be deemed excluded from the scope of this contract and the Government shall be under no obligation to establish a deliver order or provide for any payments.

c. The Architect-Engineer shall complete all services required pursuant to each resultant delivery order in accordance with the scope of work design criteria and schedule of submissions set forth herein. The standard terms and conditions of this basic contract shall take precedence

86. 5252.216-9302, INDEFINITE QUANTITY (AUT 1991)

This is an indefinite-quantity contract for the services specified, and effective for the period stated previously.

Deliver or performance shall be made only as authorized by orders issued in accordance with the Ordering clause. The Contractor shall furnish to the Government, when and if ordered, the services specified in the Schedule up to an including the "maximum" fee total designated previously.

There is no limit on the number of orders that may be issued subject only to the maximum annual value of the contract.

Any order issued during the effective period of this contract and not completed within that period shall be completed by the contractor within the time specified in the order. The contract shall govern the Contractor's and government's rights and obligations with respect to that order to the same extent as if the order were completed during the contract's effective period.

87. 5252.216-9303, MINIMUM AND MAXIMUM FEES [ARCHITECT-ENGINEER INDEFINITE-QUANTITY CONTRACTS] (AUG 1991)

As the contract minimum has been established with project #1 identified in

the basis award, -the contract maximum annual total is \$ \_\_\_\_\_

88. 5252.216-9304, ORDERING (AUG 1991)

Any services to be furnished under this contract shall be ordered by issuance of delivery orders by the individuals designated hereunder. Such orders may be issued from \_\_\_\_\_ through \_\_\_\_\_

89. 5252.216-9305, DELIVERY ORDER PROCEDURES [A-E INDEFINITE-QUANTITY CONTRACTS] (AUG 1991)

When the Contracting Office wishes to order work under the contract, the Contractor will be provided a scope of work detailing the Government's requirements and a cost proposed work. The Contractor will respond with a proposal in an expeditious manner, but in no event later than directed in the request for proposal.

Proposals. The Contractor's cost proposal will address the scope of work in sufficient detail to satisfy the EIC and Contracting Officer.

Price Breakdown. In connection with any proposal it makes, the Contractor shall furnish a price breakdown, itemized as directed by the Contracting Officer or the EIC. Unless otherwise directed, the breakdown shall be in sufficient detail to permit an analysis of all materials, labor, equipment, subcontract, and overhead costs, as well as profit, and shall cover all work involved in the scope of work. Any amount claimed for subcontractors shall be supported by a similar breakdown.

Negotiations. In the event there are differences in the Contractor's proposal and the Government Estimate, the Contractor and the Contracting Office to negotiate the extent of effort and costs of the proposed work.

(1) If the Contractor and the Government fail to agree in whole or in part on the unit costs or the level of effort, the Contracting Officer may determine, on the basis of the information available, the unit prices and/or level of effort to which the Contractor is entitled, and a unilateral delivery order or modification thereto will be issued directing the Contractor to proceed with the work. However, the Contractor may not be required unilaterally to perform work outside the general scope of the contract.

(2) It is most desirable to obtain agreement on all possible items of the work at the earliest possible time. A total unilateral deliver order will be issued only as a last resort.

(3) The Contractor shall have the right to contest, under the "DISPUTES" clause, FAR 52-233-1, any determination made by the Contracting Officer under paragraph 1, above. However, this shall not excuse the Contractor from proceeding with performance of the contract work as ordered or the contract work as changed

Delivery orders for the contract work will be on Department of Defense

DD Form 1155. DD Form 1155 will be processed as described on the form.  
The delivery order-will contain the following:

- (1) Date of order
- (2) Contract order and order number
- (3) Item number and description, quantity, and unit price
- (4) Delivery or performance date
- (5) Place of delivery or performance (including consignee)
- (6) Packaging, packing and shipping instructions, if any
- (7) Accounting and appropriation data
- (8) Statement of services
- (9) any other pertinent data

Delivery orders will be issued to the contractor in duplicate. the original shall be retained by the Government. One copy shall be submitted by the Contractor with the invoice for payment.

Oral or Written Telecommunications Orders. The Contracting Officer may issue oral or written telecommunications orders only in emergency circumstances. Oral or written telecommunications orders will be confirmed by issuance of a written delivery order on DD Form 1155 within two (2) working days.

Modifications to Delivery Orders. Orders may be modified by agreement between the Contracting Officer and the Contractor. Modifications to delivery orders shall be effected on a Standard Form 30. Orders may be modified orally-or by written telecommunications by the Contracting Officer in-emergency circumstances. Oral or written telecommunication modifications shall be confirmed by issuance of a written modification on Standard Form 30 within two (2) working days from the time of the communication modifying the order. (See Attachment \_\_\_\_\_, Section \_\_\_\_\_).

If a delivery order is deposited in the U.S. mail, mailing time (5 working days for regular mail and 1 working day for express mail). will be incorporated into the delivery order submittal schedule. The Contracting Officer will notify the A-E office when an order is deposited in the mail. The A-E will notify the Contracting Officer upon receipt of the order. If delays are encountered in mailing without the fault of the Contractor, a time extension may be granted by the Contracting Officer.

90. 5252.217-9300, OPTION TO EXTEND THE TERM OF THE CONTRACT [A-E INDEFINITE-QUANTITY CONTRACT] (AUG 1991)

The term of this contract shall expire one year from the date of execution of this contract. However, all terms and conditions of this contract shall remain in full force and effect for any project added within the one-year term until completion of and payment for the services thereunder.

The Government may extend the term of this contract by written notice to the Contractor within thirty (30) days prior to expiration of the first year, provided that the Government shall give the Contractor a preliminary written notice of its intent to extend at least sixty (60) days before the contract expires. The preliminary notice does not commit the Government to

an extension. The Government may exercise this option if: (1) a need for the services exists, and (2) performance in the first year has been satisfactory. Nothing contained herein shall be construed as a guarantee on the part of the Government to exercise the option to extend the ordering period for an additional one (1) year period. The total duration of this contract, including the option, shall not exceed two (2) years for ordering purposes.

91. 5252.229-9302, CONSUMPTION TAX EXEMPTION PROCEDURES ON PURCHASE OF GOODS AND SERVICES BY THE UNITED STATES ARMED FORCES IN JAPAN [JAPANESE LAW NO. 108, 1988] (MAR 1992)

The Consumption Tax Law (Law No. 108, 1988) was enacted in the Diet of Japan on 24 December 1988, and applied from April 1, 1989. The Government of Japan (GOJ) and the United States Government (USG), in accordance with paragraph 3, Article XII, of the "The Agreement Under Article VI of the Treaty of Mutual Cooperation And Security Between Japan And The United States of America Regarding Facilities And Areas And The Status of United States Armed Forces In Japan" (SOFA), have agreed upon procedures for exempting the United States from the Consumption Tax on the following transactions upon appropriate certification:

(1) goods and services purchased in Japan for official purposes of the U. S. Armed Forces by the U. S. Armed Forces or its authorized procurement agencies;

(2) Goods and services purchased in Japan, by persons, including corporations, who are designated by the USG in accordance with the provisions of paragraphs 1 and 2, Article XIV of the SOFA (Article XIV Contractors), solely for the purpose of performing the business of construction, maintenance or operation under the contract for construction, etc., for use by the U. S. Armed Forces, or film and gasoline purchased in Japan by Article XIV Contractors solely for the business activities described above.

b. The underlying objective is to obtain the full amount of the exemption from the tax on U. S. Forces procurement immediately at the time of purchase, and at the same time give the contractor a proof of purchase document, acceptable to GOJ tax authorities, which he/she can present to the tax authorities to obtain a tax credit and/or refund for tax already collected and paid by previous sellers.

c. By the submission of their offer, the offeror certifies that Japanese consumption tax is not part of the bid price, nor will it be a part of any subsequent modification to the contract. Procedures for Contractors to obtain a consumption tax credit are described in a handbook that may be obtained from the Procuring Contracting Office.

92. 5252.236-9300, LIMITATIONS ON AUTHORITY OF A-E (JUL 1991)

Unless specific exceptions are established by a written-instruction issued by the Contracting Officer, the A-E:

Shall not authorize any deviation from the construction contract documents or approve any substitute materials or equipment.

b. Shall not exceed limitations on the government's authority as set forth in construction contract documents.

c. Shall not undertake any of the responsibilities of the contractor, subcontractors, construction contractor's Superintendent or Contractor Quality Control Representative.

d. Shall not expedite or accelerate the work of construction contractor and subcontractors.

e. Shall not advise on or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in construction contract documents.

f. Shall not authorize or advise users to occupy projects in whole or in part, unless agreed to by the Contracting Officer.

93. 5252.236-9302, A-E CONTRACTS FOR CONSULTATION AND ADVICE (AUT 1991)

In addition to the services required by any other contract provisions, the contractor shall provide work-days of general engineering services and consultation at the construction site of at such other locations as the Government may desire, when and as required by the Contracting Officer during the course of construction.

94. 5252.236-9307, DRAWINGS PREPARED BY AN ARCHITECT-ENGINEER (AUT 1991)

The engineer or architect signing the drawings must be registered in the country of record for the Architect-Engineer company-or the country of the proposed construction--as a Professional Engineer (P.E.) or Registered Architect (R.A.) In addition, the drawings shall be signed by a responsible person of corporate status in the Architect-engineer firm and stamped with his/her registration seal when the seal is authorized by the country where the project is to be constructed.

95. 5252.236-9309, KEY PERSONNEL (AUG 1991)

The Architect-Engineer (A-E) shall employ the following professional personnel to perform the services required under this contract. Prior to starting work, the A-E will forward to the Contracting Officer a resume of the individual(s) assigned to each discipline to be utilized. No substitution will be made without the advance written approval of the Contracting Officer, after he has reviewed the proposed replacement's experience and qualifications record submitted by the Architect-Engineer with explanation of the necessity for the change. No increase in salary rates will be allowed when personnel substitution is authorized.

DISCIPLINE

NAME

JOB TITLE



96. 5252.236-9311, GENERAL STATEMENT OF ARCHITECT-ENGINEER SERVICES  
(DEC 1991)

As may be necessary to accomplish the work described in this contract, the contractor shall prepare and furnish to the Government, complete and ready for use, all necessary studies, preliminary sketches, estimates working records, and other drawings (including large scale details, as required), and specifications; shall check shop drawings furnished by the construction contractor; shall furnish consultation and advice as requested by the Government during the construction (but not including the supervision of the construction work); and shall furnish all other architectural and engineering services, including those specified hereinafter and required in connection with the accomplishment of Naval public works and/or utilities project. Without limiting the foregoing, it is further specifically agreed that:

(a) The contractor shall, if necessary, visit the site and shall hold such conferences with representatives of the Government and take such other action as may be necessary to obtain the data upon which to develop the design and preliminary sketches showing the contemplated project.

(b) The preliminary sketches shall include plans, elevations and sections developed in such detail and with such descriptive specifications as will clearly indicate the scope of the work and make possible a reasonable estimate of the cost.

(c) The preliminary sketches together with an estimate of the cost the project shown on the sketches shall be submitted for approval of the Contracting Officer.

(d) The contractor shall change the preliminary sketches to the extent necessary to meet the requirements of the Government. After approval by the Contracting Officer, the contractor shall furnish necessary prints of the approved preliminary sketches to the Contracting Officer.

(e) After the preliminary sketches and estimates have been approved, the contractor shall proceed with the preparation of complete working drawings and specifications as required by the Contracting Officer in connection with the construction of the project. Working drawings, specifications and estimates shall be delivered to the Contracting Officer in such sequence and at such times as required by the Government and as to ensure that the construction work can begin promptly, procurement of materials made without delay, and the work prosecuted continuously. Working drawings and specifications shall be revised as necessary and; as required by the Contracting Officer, the contractor shall furnish such number of sets of prints of the approved working drawings and such number of sets of the approved specifications as may be required by the Contracting Officer.

(f) Upon arrival of final plans, the contractor shall deliver to the Government one set of tracings in such medium and on such materials as may be required by the Contracting Officer suitable for blue-printing, show complete approved construction requirements (not of "as-built" construction unless otherwise stipulated); provided, however, that should this contract

be terminated by the Government, the contractor shall deliver to the Government one set-of tracings as may be required by the Contracting Officer. Such tracings as are delivered shall be signed by the Government as an indication of approval thereof, and shall become and remain the property of the Government.

(g) The contractor shall perform all necessary architectural-engineering service of every kind required in connection with the studies, designs and the preparation of drawings and specifications, but said services shall not, unless otherwise stipulated, include borings, test piles and pits, or supervision of construction work executed from the drawings and specifications; provided, however, that the contractor shall furnish upon request and without additional compensation, such amplifications and explanations and attend such conferences as may, in the opinion of the Contracting Officer, be necessary to clarify the intent of the drawings and specification, and shall afford the benefit of the contractor's advice on questions that may arise in connection with construction of the project.

(h) The contractor shall, without additional compensation, correct or revise the drawings, specifications, or other materials furnished under this contract, if the Contracting Officer finds that such revision is necessary to correct errors of deficiencies for which the contractor is responsible.

97. 5252.237-9301, SUBSTITUTIONS OF KEY PERSONNEL (AUG 1991)

The Contractor shall provide complete resumes for proposed substitutes, and any additional information requested by the Contracting Officer. Proposed substitutes should have comparable qualifications to those of the persons being replaced. The Contracting Officer will notify the Contractor within 15 calendar days after receipt of all required information of the consent on substitutions. No change in fixed unit prices may occur as a result of key personnel substitutions.

90. 5252.242-9300, ADMINISTRATIVE CONTRACTING OFFICER REPRESENTATIVES (AUG 1991)

The Engineer-in-Charge, Property Administrator, or Contract Specialist may represent the Administrative Contracting Officer as authorized.

99. 5252.242-9301, DESIGNATION OF CONTRACT SPECIALIST (AUG 1991)

The designated Contract Specialist will be the Administrative Contracting Officer's representative on all other contract administrative matters. The Contract Specialist should be contacted regarding all matters pertaining to the contract or delivery order except technical matters and property administration.

100. 5252.242-9302, DESIGNATION OF ENGINEER-IN-CHARGE [EIC] (AUG 1991)

The project EIC will be designated by the Contracting Officer upon contract delivery order award. As such, the EIC is responsible for monitoring the performance and progress, as well as overall technical management of the effort required hereunder, and should be contacted regarding questions or problems of a technical nature. In no event, however, will any understanding or agreement, modification, change order, or other matter deviating from the terms of the contract between the Contractor and any person other than the Contracting Officer be effective or binding upon the Government, unless formalized by proper contractual documents executed by the Contracting Officer prior to completion of this contract.

When, in the opinion of the Contractor, the EIC requests effort outside the scope of the contract, the Contractor will promptly notify the Contracting Officer in writing. No action will be taken by the Contractor under such technical instruction until the Contracting Officer has determined if such effort is within the scope of the contract and, if not, has issued a contract modification.

The A-E's contractual interpretations, opinions, and suggestions shall be given only to the Contracting Officer. All other interpretations, opinions and suggestions on technical matters relating to the engineering services ordered under the contract shall be given to the EIC.

## APPENDIX B: POST CONSTRUCTION AWARD SERVICES (PCAS) INFORMATION

1. PACNAVFACENGCOM letter serial 50/5123 of 09 Jul 1991
2. PACNAVFACENGCOM DESIGN DIVISION MEMORANDUM NO. 92-2 of 01 Sep 1992



DEPARTMENT OF THE NAVY  
 PACIFIC DIVISION  
 NAVAL FACILITIES ENGINEERING COMMAND  
 (MAKALAPA, HI)  
 PEARL HARBOR, HAWAII 96880-7300

11000\_\_  
 Ser 50/ 5123  
 09 JUL 1991

From: Commander, Pacific Division, Naval Facilities Engineering Command  
 To: Officer in Charge of Construction, Naval Facilities Engineering Command  
 Contracts, Mid Pacific  
 Officer in Charge of Construction, Naval Facilities Engineering Command  
 Contracts, Marianas  
 Officer in Charge of Construction, Naval Facilities Engineering Command  
 Contracts, Southwest Pacific  
 Officer in Charge of Construction, Naval Facilities Engineering Command  
 Contracts,

Subj: POST CONSTRUCTION AWARD SERVICES (PCAS) AND PRODUCTS

Ref: (a) PACNAVFACENGCOM ltr 11000 Ser 5012/4818 of 25 Jun 91

Encl: (1) NAVFAC 051 Standard Operating Procedure 201 of 20 May 91

1. Enclosure (1) is forwarded for your information and use. Although the Standard Operating Procedure is written for MCON projects, it would generally apply to other projects also.
2. Please note that enclosure (1) should be used to supplement reference (a) regarding post award services for fire protection.
3. Should you have any questions, please call Mr. T. Onuma at (808) 471-4574.

E. T. TAKAI  
 By direction

copy to:  
 PWC Pearl Harbor  
 PWC Guam  
 PWC Subic Bay  
 PWC Yokosuka



Code 400  
 PWC YOKOSUKA  
 91 AUG -1 14:22  
 RECEIVED

20 MAY 1991

NAVFAC 051 STANDARD OPERATING PROCEDURE 201

Subj: POST CONSTRUCTION AWARD SERVICES (PCAS)

Encl: (1) NAVFAC Ltr 050/FXW of 17 June 1981: Subj: Utilization of Funds after Contract Award.

1. Purpose: To establish guidelines for PCAS, i.e., what are considered appropriate PCAS services.

2. Background Enclosure (1) outlines the types of services and products which can be funded by project funds after the construction contract for the project has been awarded. Engineering services required prior to award of the construction contract are properly charged to design. The services and products commonly designated PCAS are included in enclosure (1) under '\*Construction Project Funds', as distinguished from Supervision, Inspection and Overhead (SIOH) funds which are designated in enclosure (1) under 'Mission Management Funds'.

a. The PCAS services and products (chargeable to project funds) include:

- 1) Review of shop drawings and submittals,
- 2) Review of value engineering contractor proposals,
- 3) Materials sampling and testing,
- 4) Designs for modifications and correction of deficiencies,
- 5) Special non-standard tools required to initially operate/service installed equipment,
- 6) Specialized training of personnel on facility systems installed as part of the construction contract (course cost only),
- 7) Operating manuals, and Operation & Maintenance Support Information (OMSI),
- 8) Preparation of as-built drawings,
- 9) Administrative expenses involved in land purchases,
- 10) Specialized consultation/certification (for example nuclear standards and hyperbaric certification) when in authorized scope, and
- 11) Specific field consultation cases, as outlined in paragraph 2d. below.

b. Services properly charged to SIOH include:

- 1) All inspection and contract administration, including that by AR,
- 2) Post Award Program and project management, technical direction and coordination,
- 3) Post Award evaluations,
- 4) Award and administration of contracts which call for inspection and surveillance,
- 5) All post award support for OPN Crane Procurement,
- 6) Administrative expenses involve&in land exchanges, and

7) Expert witness support for claims, hearings, etc.

Historically, PCAS has been estimated to cost about 1.5% of construction contract amount for the "average" project, i.e., those in the \$1-5M range. This cost is not separately identified on DD Form 1391, but is generally built into the Primary Facility Unit Cost.

d. EFDs have occasionally desired to use more than the 1.5% allowed for PCAS in calculating project funding requirements. Rates of 3.5-5.0% have been requested on some projects. This higher percentage represents a conscious effort to increase A/E' involvement during construction. The A/E may be paid to visit sites on a regular basis, to send a principal of the firm periodically, and to provide more frequent advice to ROICCs, etc. Higher rates are also sought to fund increased in-house personnel visits to construction sites, and A/E pre-construction briefings to ROICCs. All of these situations are appropriate PCAS charges.

3. Policy: a. NAVFAC has determined that 1.5% is the maximum allowance for PCAS in programming initial project funding requirements.

b. Although a project's initial funding requirement will be lower, EFDs are free to proceed with higher PCAS costs within the allowable categories described above. However, such costs must come from project cost and budget.

c. NAVFAC's policy is to continue to compare, as appropriate, EFD PCAS requests to 1.5% when establishing initial project funding requirements, but will allow higher amounts when appropriate.

d. When calculating award CWE, the actual PCAS rate requested by the EFD will be utilized.



J. M. KEIFER

Distribution:  
All 051

copy to:  
05, 05A  
050, 052  
All EFD 09A2

Drafter J. Courtillet (0511)



**DEPARTMENT OF THE NAVY**

NAVAL FACILITIES (ENGINEERING COMMAND)

900 STOVALL STREET

ALEXANDRIA VA 22332

NAVY REF ID:  
050/FXW  
17 JUN 1981

**From: Commander, Naval Facilities Engineering Command**  
**To: Distribution**


**Subj.: Utilization of funds after Construction Contract Award**

**Ref: (a) NAVFAC Ltr 050/FXW of 29 May 1981**

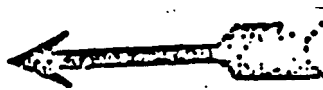
**Encl: (1) Guidelines for determining types of funds to be utilized  
for various products and services after Construction Contract  
Award**

1. Reference (a) provided a single source preliminary guideline for purchasing products and services after Construction Contract Award. Based upon discussions held at the Project Management Workshop (8-11 June 1981) various clarifications were provided which are included in enclosure (1).

2. Enclosure (1). provides guidance as to types of funds to be utilized for post award products and services and is to be utilized for all work undertaken unless some precedent memorandum of agreement or similar agreement is in existence.

  
F. X. WATSON  
By direction

**Distribution:**  
COMLANTNAVFACENGCOM  
COMPACNAVFACENGCOM  
CO NORTHNAVFACENGCOM  
CO SOUTHNAVFACENGCOM  
CO WESTNAVFACENGCOM  
CO CHESNAVFACENGCOM  
OICC TRIDENT







GUIDELINES FOR DETERMINING TYPES OF FUNDS TO BE UTILIZED FOR  
VARIOUS PRODUCTS AND SERVICES AFTER CONSTRUCTION CONTRACT AWARD

A. Planning & Design Funds

- . Used only for completion of design for scope contemplated at the start of the project;

B. Construction Project Funds

- . Operating manuals
- . Specialized training of personnel on facility systems installed as part of the construction contract (course cost only).
- . Special non standard tools required for to initially operate/service installed equipment.
- . Preparation of as-built drawings.
- . Designs for change orders and correction of deficiencies.  
Review of Value Engineering Contractor Proposals.
- . Review of shop drawings and submittals.
- . Materials sampling and testing.
- . Administrative expenses involved in land purchase.
- . Specialized consultation/certification (for example nuclear standards and hyperbaric certification) when in auth scope.

C. Mission Management Funds (funds assigned through OP-Plan)

- . All inspection and contract administration.
- . All post award support for OPN Crane Procurements.
- . Post Award Program and project management, technical direction and coordination.
- . Expert witness support for claims, hearings, etc.
- . Award and administration of contracts which call for inspection and surveillance.
- . Administrative expenses Involved in land exchanges.
- . Post Award evaluations.

01 SEP 1992

PACNAVFACENCOM DESIGN DIVISION MEMORANDUM NO. 92-2

From: Director, Design Division  
To: All PDE's

Subj: ARCHITECT-ENGINEER (A-E) POST CONSTRUCTION AWARD SERVICES (PCAS)

Encl: (1) Field Trip Justification Sample  
(2) Critical Items Summary Sample  
(3) Request for A-E Services Form  
(4) Record of Consultation Report

1. Purpose. To establish policies and procedures for Architect-Engineer Post Construction Award Services.
2. Cancellation. This memo supersedes Design Memo No. 88-9 dated 9 May 88.
3. Background. Design of projects is awarded to firms having expertise in the type of facility being constructed. During the design, the Designer of Record (DOR)/Architect-Engineer (A-E) develops further expertise on the project and therefore is in a better position than the PDE to provide PCAS to the ROICC on critical, complex, and highly technical items. All other technical items, unless indicated otherwise, is reviewed and approved by the CQC representative.
4. Policy. Services for known requirements, items (a) through (d) below, shall be negotiated under a firm fixed-price arrangement. Only for these items may the ROICC have direct access to the A-E. Unforeseen consultation services for out of scope design changes, item (e), shall be ordered by the PDE on an indefinite quantity, maximum unit type basis.
  - a. Post Award Designer and Pre-Construction Planning Conference. Post Award Designer and Pre-Construction Planning Conferences are generally for large, complex, and highly technical projects and when requested by the ROICC. (These conferences/meetings are different from that which may be included in the basic contract.)
  - b. Submittal Reviews. The DOR/A-E shall review and recommend for Contracting Officer's approval/disapproval all critical, complex, and highly technical items. Reviews requiring subjective choices such as material texture and color shall be coordinated with using activity. All other technical items, unless indicated otherwise, will be reviewed and approved by the CQC Representative and his staff. This may include fire protection reviews by a CQC Staff Engineer who is required to be a registered Fire Protection Engineer. Quality Assurance for items approved by CQC will be handled by the ROICC.
  - c. On-Site A-E Field Support. DOR/A-E involvement in the field will depend on the complexity of the project and capability of the Government and Contractor construction team. (Trips for familiarization and general observation are not authorized.)
  - d. As-built Drawings. This effort should be negotiated after receipt of marked-up drawings since it is not possible to know the level of effort involved until after completion of the project.

Subj: ARCHITECT-ENGINEER (A-E) POST CONSTRUCTION AWARD SERVICES (PCAS)

e. Office and Field Consultation. (To answer/resolve unforeseen questions/problems which includes Value Engineering Change Proposals.) Allows for quick A-E support to the ROICC for unforeseen out of scope design problems.

f. Design Errors or Omissions. PCAS consultation is not for correcting design errors or omissions or clarifying details and specifications. The Designer of Record (DOR) must provide these services at no additional cost to the Government.

5. Funds. PCAS is funded from project construction funds and SIOH. The goal is to keep PCAS funded by project funds within 1% of the construction cost. The 1% cost includes A-E fees and I-H cost. If justification is provided to PACNAVFACENGCOM (Codes 04 and 50) for complex projects such as power plants, shipyard utility repairs, etc., and when extensive travel is involved for off-island projects, the 1% goal may be exceeded. PCAS is generally funded by the project; however, SIOH supported items requested by the ROICC may also be included in the PCAS scope. The following funding areas include but is not limited to the following items:

a. SIOH Funds (Provided by the PM). Finance the following costs:

(1) All contract administration and quality assurance.

(2) Project management, technical direction and coordination.

(3) Expert witness support for claims, hearings, etc.

(4) Award and administration of contracts which call for inspection and surveillance (Title II).

(5) All inspection and surveillance of routine pile driving, pouring of concrete, soil compaction, etc., for conformance with plans and specifications.

b. Project Funds. Finance the following costs:

(1) Designer/ROICC Conference.

(2) Specialized training of personnel on facility systems installed as part of the construction contract (course cost only).

(3) Special nonstandard tools required to initially operate/service installed equipment.

(4) Preparation of as-built drawings;

(5) Designs for unforeseen change orders and other modifications as required.

Subj: ARCHITECT-ENGINEER (A-E) POST CONSTRUCTION AWARD SERVICES (PCAS)

(6) Review of Value Engineering Contractor proposals.

(7) Review of identified critical submittals that are necessary to verify or validate design requirements.

(8) Specialized consultation/certification (for example, nuclear standards and hyperbaric certification).

(9) Field consultation on critical questions requiring DOR/A-E field support for items identified under the critical items list that will be necessary to validate or complete design requirements. For example, witness test pile driving to complete design by determining pile lengths, locations, and quantity.

(10) Review of critical item shop drawings showing contractor prepared details to verify DOR/A-E design requirements such as structural connectors, installation details of structural members, appurtenance related to structural strength, integrity of the system, and items of significant design or cost importance.

6. Development of Scope

a. Step I. Assemble documents required to determine PCAS.

Designer of Record (DOR): Shall submit at the 100% design stage the following documents:

(1) 100% specification which includes the submittal register in Section 01300, "Submittals", identifying all submittals required by the specification. Only items the CQC representative or Government will approve should be identified. CQC representative approves everything except the identified critical, complex, and highly technical items, administrative items, and items requiring subjective choices such as material texture and color.

(2) A separate submittal register, a duplicate of what is in the contract specification, also indicates recommended items that the A-E should review. The A-E should review critical items and structural shop drawings. Intent is also to have the A-E spot check the CQC system for quality assurance. This submittal register will become a part of the A-E scope of work (should not be revealed to the Contractor) which is used by ROICC to coordinate PCAS with the PDE.

(3) Recommended On-Site A-E Field Support Schedule, which is a schedule of DOR field support of the design to assist the ROICC on critical items for quality assurance. Include reason(s) for field support with description of services to be performed, examples shown in enclosure (1). As a general rule, field support should be for critical design elements/phase of work. The number of visits and A-E team composition should be based on the size, complexity, qualifications of ROICC personnel at job site (consult with ROICC and

Subj: ARCHITECT-ENGINEER (A-E) POST CONSTRUCTION AWARD SERVICES (PCAS)

PACNAVFACENGCOM ((Code 505)) on qualifications), reputation of the Construction Contractor, and location of the project. Only the discipline(s) directly involved with that particular critical design element should make site visit(s).

(4) Critical Items Summary. A narrative of critical items, examples shown by enclosure (2), quality assurance requirements, and construction sequence/processes that are critical to the successful completion of the project on schedule.

(5) Construction Schedule (Simplified Critical Path Method Chart or Bar Graph) is provided for ROICC review/validation of "Contract Completion Time".

PDE: Forward by formal letter to the ROICC for review.  
(Constructibility review form letter is appropriate.)

ROICC: Submit to the PDE a marked up submittal register identifying those items that the A-E should review and a recommended on-site DOR/A-E field support schedule identifying DOR/A-E field support to the ROICC on critical items.

b. Step II. Determine PCAS requirements with ROICC.

A meeting with ROICC, PDE and A-E (which is part of the basic contract) is normally held to determine PCAS scope. This meeting should be scheduled for the same day or the day after the 100% design review conference for overseas locations such as Guam, Diego Garcia, etc. For OICC MIDPAC, meeting may be scheduled at another time if travel cost is not a factor.

PDE: Set up and chair the meeting. Notify, in writing, the DOR/A-E, OICC/ROICC, OICC (Code 05) with copy to PACNAVFACENGCOM (Codes 04 and 505) of meeting. Be prepared to identify PCAS scope within 1% budget. (May have to be discussed after A-E representatives have left meeting.)

DOR/A-E: Provide PDE, seven (7) days prior to meeting, a written outline of presentation with handouts for review. Make revisions identified by the PDE. Give presentation addressing items listed below. Submit a draft (handwritten acceptable) of the minutes of meeting at the COB of the day of the meeting, with the final submitted within five (5) working days. Should the meeting extend beyond normal working hours, submit the draft by 12 noon the next working day.

(1) A summary of the technical features of the project.

(2) Background design information including problems, alternatives, and solutions considered during design. Provide photo slides of existing conditions and siting.

(3) A discussion of the user's concerns, special interests, and cautions expressed during meetings with him. Show color perspective/rendering of project that was used during the design stage.

Subj: ARCHITECT-ENGINEER (A-E) POST CONSTRUCTION AWARD SERVICES (PCAS)

(4) New technologies incorporated into the design.

(5) A discussion of the critical items in the project (including construction sequence) for which the ROICC should give his special attention. Identify any long lead items and special equipment.

(6) A discussion of the PCAS proposed and the procedures for obtaining them.

(7) A brief description of the A-E's organization and the key people with whom the ROICC will have contact.

ROICC: Reach an agreement with the PDE on what PCAS items are desired within funding limitations. Set priorities for cases where the PCAS scope is greater than 0.8% target. Allow 0.2% for variations in effort between government and A-E estimate. Decide who (PACDIV or ROICC) will be coordinating/monitoring what services. Generally, services negotiated as firm fixed-price up-front (submittal reviews, critical items) will be coordinated/monitored by the ROICC. Forward percent completed monthly to PACNAVFACENGCOM 02 for invoice verification.

If no PCAS meeting is held:

PDE: Forward by formal letter to the OICC/ROICC a draft PCAS scope of work and a PCAS Government estimate identified as "Official Use Only" including, but not limited to, submittal register, critical items summary, construction schedules, recommended field support items. Request their comments/recommendations or concurrence within 15 calendar days of receipt of the letter.

C. Step III Final scope of work.

PDE: Prepare final scope of work and Government estimate, identifying SIOH and project funded items (see paragraph 5), based on PCAS meeting or correspondence with the ROICC.

By formal letter, signed by the Branch Manager, forward Scope of Work and Government estimate for ROICC approval with copy to PACNAVFACENGCOM (Codes 505 and 501).

Upon receipt of the project assignment sheet for PCAS and/or "committed funds" are identified by the Program Manager (PM), provide technical assistance to the Contracting Officer representative (02) to negotiate the level of effort and forward the technical analysis to PACNAVFACENGCOM (Code 02) before the construction contract is awarded. Follow up if PACNAVFACENGCOM (Code 02) does not award within ten (10) calendar days of construction contract award.

If funds are not available, staff the applicable documents ahead of time to speed up the PCAS contract award process. Once funds are available, notify PACNAVFACENGCOM 02 to complete negotiation and forward technical analysis to PACNAVFACENGCOM (Code 02) within ten (10) working days.

Subj: ARCHITECT-ENGINEER (A-E) POST CONSTRUCTION AWARD SERVICES (PCAS)

By formal letter, chopped by PACNAVFACENCOM (Code SOS), forward the PCAS contract modification and minutes of correspondence identifying items covered by PCAS to the appropriate OICC and ROICC.

OICC: Inform PACDIV PDE and PM of construction contract award date.

PM: Follow up and ensure OA is completed.

## 7. Responsibilities of Parties Involved

a. Post Award Designer and Pre-Construction Planning Conference (if deemed necessary by ROICC and if approved by the PM) is in addition to the 100% Design Meeting and is held after construction contract award. The construction contractor should also attend when appropriate.

ROICC. Notify PDE of date, time, and place of meeting at least two weeks prior to the meeting (45 days for Guam and other overseas areas to allow time for the required 30-day advance area clearance request). Forward any known Contractor questions to the PDE.

PDE. Notify A-E, attend meeting and resolve applicable Contractor questions.

A-E. Attend meeting, answer questions and prepare minutes of meeting.

b. Submittal Review (Note: Submittal turn-around time should be agreed upon between the A-E and Government, preferably at the Designer/ROICC meeting, if held and should match Specification Section 01300, "Submittals".)

ROICC. Filter out excessive clarification requests by the Contractor and/or obvious deficient shop drawings. Send submittals on submittal register shown as "A-E" review directly to the A-E within three (3) working days after receipt of the submittal from the Contractor. All shop drawings shall be transmitted to the DOR/A-E by courier (both ways). Approve/Disapprove submittals based on DOR/A-E recommendations. Return action copy to the Contractor.

A-E. Review submittal, keep one copy, send one copy to the PDE and the remainder to the ROICC. Submit with the submittals a separate cover letter whenever the A-E recommends "Approval Subject To The Corrections Noted", "Return For Corrections Noted And Resubmission", "Revise and Resubmit", "Rejected", or "Disapproval". The letter shall clearly describe why the particular action was recommended.

PDE. Review submittal only for the purpose of monitoring the quality of the A-E's work and appropriateness of the A-E's response for submittals that were not approved. When PDE disagrees with A-E's recommendations (approval/disapproval), have the A-E take a second look. Inform A-E that he is still liable for whatever he finally recommends.

Subj: ARCHITECT-ENGINEER (A-E) POST CONSTRUCTION AWARD SERVICES (PCAS)

C. On-Site A-E Field Support (Trips negotiated under firm fixed price)

ROICC. Notify PDE of appropriate time for this field support. (If A-E is notified directly, follow up and notify PDE.) Generally the ROICC should pick a time that will allow the A-E to get the maximum benefit from the visit. The OICC/ROICC will normally select a time when there is a specific problem for which he wants A-E input.

PDE. Advise A-E when the visit should be made based on the OICC/ROICC's input, and accompany A-E if required.

A-E. Make visit, prepare report. Provide POA&M as required.

d. As-Built (Record Drawings)

ROICC. Obtain and review, for accuracy and completeness, annotated construction drawings from Contractor. Ensure equipment model number, capacity, name plate data, etc. are shown. If satisfactory, send the drawings to the PDE. Get Contractor to resolve discrepancies surfaced by the PDE/A-E.

PDE. Review, forward drawings to A-E, review completed work, make copies and forward them to the user with copy of letter only to the ROICC.

A-E. Make changes. If there should be differences from what A-E knows were changes to that shown, apprise PDE and OICC/ROICC and get resolution.

e. Unforeseen Consultation

ROICC. Contact (generally by phone/facsimile memo for urgent items, and written memo/letter for others) the PDE and provide a clear description of the problem and/or service required (ROICC/OICC does not contact A-E directly).

PDE. Review information received and make the following determinations:

(1) If it is a design error or omission or simply requires clarification on a technical item which is covered by poor/insufficient plans and specifications, inform the A-E that it is his responsibility to provide the services under the basic design contract at no additional cost to the Government. If the A-E disagrees that it is his responsibility, prepare 'a letter, sample as shown in enclosure (3), signed by the Contracting Officer Code 02, directing him to perform the requested work.

(2) If the services requested is not attributed to design error or omission and requires DOR/A-E consultation for an out of scope design change, do the following to exercise the IDQ portion of the PCAS scope:

(a) Prepare a Government estimate (based on the unit work allowed in the contract) and description of work.



Subj: ARCHITECT-ENGINEER (A-E) POST CONSTRUCTION AWARD SERVICES (PCAS)

(b) Forward the description of work via facsimile or courier to the A-E.

(c) Negotiate (over the telephone) the level of effort required with the A-E on a firm fixed-price basis.

(d) Prepare and forward (facsimile/courier) enclosure (4) to the A-E for signature which initiates start of work. No adjustment will be allowed when the actual effort expended differs from that agreed upon during the negotiation unless there's a change in scope.

(e) If A-E does not require a site visit, complete the bottom of the form verifying that the work has been completed, and forward to PACNAVFACENGCOM (Code 02) for record. Send a copy of the completed form to the A-E for record.

(f) Following completed work, obtain the partially completed enclosure (4) form from the ROICC/A-E as applicable, complete the bottom of the form verifying that the work has been completed, and forward to PACNAVFACENGCOM (Code 02) for record. Send a copy of the completed form to the A-E for record.

(g) Maintain a running log of the unit work allowed in the PCAS contract to assure that the indefinite quantity portion of the contract is not exceeded.

A-E. Upon receiving and signing the partially completed enclosure (4) form from the PDE, perform the requested work.

(a) If the work requires field trips, provide reports/in-and-out briefs in accordance with paragraph 7, "Reports/In-and-Out Briefs for Consultation Services." Complete the middle section of the signed enclosure (4) form and submit the original to the ROICC. Send a copy of the partially completed form to the PDE.

(b) Submit a copy of the signed enclosure (4) form with the request for payment.

ROICC. Evaluate A-E's work using the signed enclosure (4) form and return completed form to PDE within five (5) working days after PCAS completed. Notify PDE if the scope of A-E services requires change, i.e., increase or decrease in scope.

f. Consultation on Definitive Critical Items. (Items may have been negotiated on a firm fixed-price basis).

ROICC. Contact A-E directly, and follow-up with a telephone conversation and memorandum to the PDE within three (3) working days.

A-E. Respond promptly, directly to the OICC/ROICC. Provide reports/in-and-out briefs per paragraph 8, "Reports/In-and-Out Briefs for Consultation Services".

Subj: ARCHITECT-ENGINEER (A-E) POST CONSTRUCTION AWARD SERVICES (PCAS)

PDE. Prepare area clearance as necessary. Review A-E's report of consultation. Make sure that A-E is providing prompt service as required.

g. Pile Driving Work

ROICC. Schedule work in advance with A-E and PDE by formal correspondence. Provide two weeks notice before starting any work requiring on-site consultation. Monitor A-E performance, ensure that A-E performs as required by the scope, and review reports as received.

PDE. Prepare area clearances as necessary. Coordinate with ROICC and A-E to ensure services are provided at the appropriate time.

A-E. Provide on-site field and office work as required by the Scope. Field work may involve several weeks or months at the site.

h. Unforeseen On Site Consultation

OICC/ROICC. Requests assistance and provide memorandum to PACNAVFACENGCOM 04.

PDE. PACNAVFACENGCOM 04 and Branch Manager to concur with memorandum that this assistance should be provided by the A-E vice other means such as I-H and forward to PDE for execution. Negotiate in accordance with paragraph 6.e. "Unforeseen Consultation". Monitor work and review report of work accomplished by A-E. If potential liability is involved, draft a letter, sample letter provided as enclosure (3), for the Contracting Officer's signature directing the A-E to perform the work. Get PACNAVFACENGCOM 09C involved in potential liability issues.

A-E. Perform work. Provide reports/in-and-out briefs in accordance with paragraph 8, "Reports/In-and-Out Briefs for Consultation Services," as follows:

(1) Oral presentation of findings to the ROICC prior to leaving site.

(2) A report to the PDE who makes distribution within five (5) days after oral presentation.

8. Reports/In-and-Out Briefs for Consultation Services

a. For on-site consultation, A-E shall in-and-out brief the ROICC and the PDE. For overseas projects include the OICC's. The PDE may be briefed separately at PACDIV. If the PDE is not available, include either the Branch or Design Manager. Submit to the ROICC at the out brief a written report, prepared by the A-E, for PCAS rendered. This may be a handwritten draft with the final submitted to the ROICC and PDE within five (5) working days. PDE forward final to PACNAVFACENGCOM (Code 04S) to be included in the "Daily Chrono File". (If the PDE does not accompany the A-E on the trip, the PDE shall coordinate the trip for the A-E including obtaining area clearances and scheduling briefs with the ROICC/OICC.)

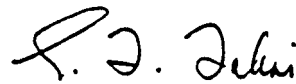
Subj: ARCHITECT-ENGINEER (A-E) POST CONSTRUCTION AWARD SERVICES (PCAS)

b. For office consultation, A-E submits written report to the ROICC and PDE within five (5) working days after completion of each consultation service. Report shall include as a minimum:

- (1) Reference of phone conversation or letter requesting services.
- (2) Description of services (purpose/objectives) required and performed.
- (3) A-E representatives who performed services with their titles.
- (4) Person(s) contacted with phone numbers.
- (5) Person(s) that attended in-and-out briefs.
- (6) Problem(s) encountered.
- (7) Recommended solution(s) and/or proposed milestones for resolution.

9. At the end of the contract, the contract price for unforeseen consultation shall be adjusted downward for any unit of work not ordered. A deductive amendment shall also be processed for firm fixed-price services not ordered.

10. Action. The policy and procedures set forth in this memorandum are effective immediately for all new PCAS services.



E. T. TAKAI

copy to:

OICC PACNAVFACENCOM DET Far East

OICC Marianas (Code 90)

OICC MIDPAC (Code 05)

OICC Okinawa (K. Little)

09A/09AA

50

501

505

02

04 Branch Managers

402:MTT:nko  
\402\PCAS05

RECOMMENDED PCAS FIELD TRIPS:

1. Trip No. 1 for Geotechnical Engineer - This trip should coincide with the start of pile driving. The trip will include checking the Contractor's equipment, method of positioning piles and witnessing the first few days of pile driving. During the pile driving, the Geotechnical Engineer will keep his own pile driving records for comparison with those kept by the Contractor.
2. Trip No. 2 for Geotechnical Engineer - This trip should take place during the driving of the piles for Substation No. 2. The engineer will take the time to inspect all piles driven since his last visit and to review all the pile driving records. Should a problem have arisen before this time frame which necessitated a field trip by the Geotechnical Engineer, that field trip may possibly take the place of this second trip.
3. Structural Engineer Trip - This trip should be timed for the placing of the concrete for the Substation No. 2 pile caps and deck. Before the concrete placement, the engineer shall provide on-site consultation for the concrete batch plant, the concrete mix, the forms and bracing, the reinforcing steel, and the Contractor's method of placing of the concrete. He should also observe the actual concrete placement.
4. Trip No. 1 for Electrical Engineer - This trip should be made at the completion of the installation of the transformer and the switchgear at Substation No. 2 including all connecting wiring and bus duct within the substation and the connection of the substation to the two 13.8 KV feeders. The engineer will provide on-site consultation for the entire installation and will witness the energizing at the entire substation.
5. Trip No. 2 for Electrical Engineer - This trip should be made at the completion of the secondary distribution system from Substation No. 2 including all controls. The engineer will provide on-site consultation for the entire installation from the switchgear to and including the cubicles. He will witness the energizing of the 480-Volt system and the testing of same by the Contractor.

CRITICAL ITEMS SUMMARY

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>DRAWING</u>
1.	<u>Geotechnical Engineer</u> : Ensure a qualified Geotechnical Engineer observes the pile driving operations and is available to answer questions that arise.	01400 Para 1.3.1	7066058
2.	<u>Piles</u> :		
a.	Ensure a qualified/experienced person maintains the pile driving records which includes the blow counts.	02367 Para 3.2.2	
b.	Check the Contractor's pile driver, equipment, method of positioning piles and proposed pile driving schedule.	02367 Para 3.1.3 3.2.2	7066058
c.	Do not overdrive piles since they are friction piles. If the Contractor should accidentally overdrive a pile, be sure to get the pile driving history of that pile and have the Contractor design the required buildup section in accordance with the specs and forward to the designers by courier as soon as possible, advising the designers by telephone or cable that the information is on its way.	02367 Para 3.1.8	7066061
3.	<u>Underwharf Results</u> : The underwharf vaults are precast. Be sure that the Contractor provides shop drawings for the precast vault. The shop drawings should show the lifting points and the lifting system. Have the designers check the Contractor's approved shop drawings. Be sure the vaults are waterproofed inside and out and that they are in the proper place before the pile caps and deck are cast-in-place.	03300 Para 3.3.3 07130 Para 3.1	7066061 7066059

ITEM	<u>DESCRIPTION</u>	<u>SPEC</u>	<u>DRAWING</u>
4 .	<u>Electrical:</u>		
	a. Where new lines cross or follow an existing line be sure that outages on the existing lines are coordinated so that the Contractor does not have to work the lines hot. Determine if outages will be required during other than working hours due to station loads and that proper safety precautions, such as the use of blankets, are taken.		7066036 7066037 7066038
	b. The switchgear, transformer and the 600 MCM cable are long lead time items. Although 600 MCM is a standard size cable, it is not a cable that is normally kept in stock by the cable manufacturers. The switchgear, transformer and the 600 MCM cable will have to be manufactured after the Contractor places his order. Thus every effort should be made to get the Contractor to turn in his shop drawings and catalog cuts as soon as possible.	16335 16475	7066065 7066069
	c. Splices and terminations other than those on the 600-Volt system are to be made by PWC Subic. The Contractor is to supply all splice and terminator kits complete and any other material that is required. The ROICC must coordinate the work between the Contractor and PWC so that neither is held up. He must be sure that all materials are on hand to avoid long outages.		7066045 7066046 7066065
	d. Other Contractors will also be working on the wharf. Be sure that this Contractor's work is coordinated with the other Contractors.		
	e. The existing wharf lighting system is served by Substation No. 5. The lighting system should be kept operational at all times.		

(REQUEST FOR A-E ACTION ON CONSTRUCTION PROBLEM)

(Design A-E)

(AE address)

Gentlemen:

CONTRACT N62742 \_\_\_\_\_ (provide. contract title,  
P number, and location of project)

This letter is to confirm phoncon (...or other expeditious communication means  
... e.g. FAX) between (AE REP and PACDIV REP) on (date) informing you of a  
problem on subject contract.

Per (cite comments from field e.g. phoncon from ROICC) the following  
problem(s) (was) (were) identified:

\_\_\_\_\_  
(list each problem)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

As the designer of record and in accordance with clause 52.236-23  
Responsibility of the Architect-Engineer Contractor, of subject contract, you  
are responsible for the professional quality, technical accuracy, and the  
coordination of all designs, drawings, specifications and other services -  
furnished by the contractor under the contract.

Your immediate attention to the above problem would be greatly appreciated.  
Subsequent to the identification of the problem(s), if any errors or  
deficiencies in the design, drawings, specifications or other services are  
found, you are requested to correct or revise the above expeditiously under  
clause 52.236-23 of the subject contract. If it is determined that the  
problem(s) (is) (are) not due to design errors or deficiencies, this action  
will be covered by (state amendment or basic contract covering PCAS). Point  
of contract for this matter is (PDE & telephone number).

RECORD OF CONSULTATION REQUEST NO. \_\_\_\_\_

Subj: PCAS UNDER CONTRACT \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Ref: (a) \_\_\_\_\_

Encl: (1) Fee Breakdown

Per reference (a), for the firm fixed price of \$\_\_\_\_\_, enclosure (1).  
consultation services shall be provided: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The firm fixed price amount agreed upon will not be adjusted upward or downward to the actual effort expended to accomplish the work identified above.

\_\_\_\_\_  
A-E Signature Date PDE or Br. Mgr. Signature Date

\_\_\_\_\_  
FOR A-E USE, Submit copy with request for payment and submit original to the ROICC

Name/Title of A-E Representative: \_\_\_\_\_  
Date of OICC/ROICC in-brief: \_\_\_\_\_ Date of OICC/ROICC out-brief: \_\_\_\_\_  
Date draft report submitted: \_\_\_\_\_ Date final report submitted: \_\_\_\_\_

\_\_\_\_\_  
A-E Signature Date

\_\_\_\_\_  
FOR ROICC USE. Submit original to PDE after receipt of final report.

Consultation services requested for the following reason:  
PLAN \_\_\_\_\_ UNFO \_\_\_\_\_ SCPE \_\_\_\_\_ DSGN \_\_\_\_\_ C R E O \_\_\_\_\_ CRIT \_\_\_\_\_ E R O M \_\_\_\_\_  
(Note: Do not pay A-E for DSGN or EROM)  
Consultation Service was:  
Unsat \_\_\_\_\_ Marginal \_\_\_\_\_ Sat \_\_\_\_\_ Highly Sat \_\_\_\_\_ Outstanding \_\_\_\_\_  
(Note: Provide justification for UNSAT, MARGINAL, and OUTSTANDING)

\_\_\_\_\_  
ROICC Signature Date

\_\_\_\_\_  
FOR PDE USE.  
Work has been completed and is acceptable to the Government.

\_\_\_\_\_  
copy to: PDE or Br. Mgr Signature Date  
A-E/PDE/ROICC \_\_\_\_\_



RECORD OF CONSULTATION REQUEST NO. \_\_\_\_\_

F E E B R E A K D O W N

Total Negotiated: \$ \_\_\_\_\_ Date: \_\_\_\_\_

Total Used to Date: \$ \_\_\_\_\_

<u>Engineering Discipline or Other Work Required</u>	<u>Maximum No. of Units</u>	<u>Units Used To Date</u>	<u>Units For This Consultation</u>	<u>Unit Cost (incl. OH Profit &amp; Tax)</u>	<u>Total Cost (incl. OH Profit &amp; Tax)</u>
Project Engineer	_____	Manhours _____	_____	_____	_____
Architect	_____	Manhours _____	_____	_____	_____
Civil Engineer	_____	Manhours _____	_____	_____	_____
Structural Engineer	_____	Manhours _____	_____	_____	_____
Electrical Engineer	_____	Manhours _____	_____	_____	_____
Mechanical Engineer	_____	Manhours _____	_____	_____	_____
Specifications Engr	_____	Manhours _____	_____	_____	_____
Cost Estimator	_____	Manhours _____	_____	_____	_____
Geotechnical Engr	_____	Manhours _____	_____	_____	_____
Typist	_____	Manhours _____	_____	_____	_____
Transportation, Air	_____	Rnd Trips _____	_____	_____	_____
Transportation, Grnd	_____	Rnd Trips _____	_____	_____	_____
Per Diem	_____	Days _____	_____	_____	_____
Other	_____	_____	_____	_____	_____

\_\_\_\_\_  
 Total for  
 this  
 Consultation  
 Service



## APPENDIX C: GOV- FORMS

1. DD Form 1155 (May 90)
2. SF Form 1421 (10-83)
3. NAVFAC 11014/64 (Rev. 5-74)(2 pages)
4. DD Form 1391, DD Form 1391c (1 Dec 76)
5. NAVFAC 7300/41 (7/85)
6. OICC FE 10-7300
7. NAVFAC 4330/7 (6-72)
8. NAVFAC 11012/9 (5-90)
9. OICC FAR EAST 4330 (4-83)
10. NAVFAC 11013/7 (1-78)
11. NAVFAC 4330/43 (8/88)
12. Sample Certification Form Regarding Class I Ozone Depleting Substances
13. SF 255 Architect-Engineer and Related Services Questionnaire for Specific Project
14. SF 254 Architect-Engineer and Related Services Questionnaire

# ORDER FOR SUPPLIES OR SERVICES

(Contractor must submit four copies of invoice.)

Form Approved  
OMB No. 0704-0187  
Expires Aug 31, 1992

PAGE 1 OF

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0187), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send your completed form to the procurement official identified in item 6.

1. CONTRACT/PURCH ORDER NO.		2. DELIVERY ORDER NO.		3. DATE OF ORDER	4. REQUISITION/PURCH REQUEST NO.	5. CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REG 1	
6. ISSUED BY				CODE	7. ADMINISTERED BY (If other than 6)		CODE
8. DELIVERY FOB				DO			
<input type="checkbox"/> DEST <input type="checkbox"/> OTHER (See Schedule if other)							
9. CONTRACTOR		CODE		FACILITY CODE		10. DELIVER TO FOB POINT BY (Date)	
NAME AND ADDRESS						11. MARK IF BUSINESS IS	
						<input type="checkbox"/> SMALL <input type="checkbox"/> SMALL DISADVANTAGED <input type="checkbox"/> WOMEN-OWNED	
						12. DISCOUNT TERMS	
						13. MAIL INVOICES TO	

14. SHIP TO		CODE		15. PAYMENT WILL BE MADE BY		CODE		MARK ALL PACKAGES AND PAPERS WITH CONTRACT OR ORDER NUMBER

16. TYPE OF ORDER	DELIVERY	This delivery order is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.						
	PURCHASE	Reference your _____ furnish the following on terms specified herein.						
ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.								

NAME OF CONTRACTOR	SIGNATURE	TYPED NAME AND TITLE	DATE SIGNED
If this box is marked, supplier must sign Acceptance and return the following number of copies:			

ITEM NO.	APPROPRIATION SYMBOL AND SUBHEAD	OBJECT CLASS	BUREAU CONT. NO.	SUB-ALLOT	ACCOUNTING AND APPROPRIATION DATA			COUNTRY	COST CODE	AMOUNT
					AUTH'N ACCT'G ACTY	TRANS. TYPE	PROPERTY ACCT'G ACTY			

18. ITEM NO.	19. SCHEDULE OF SUPPLIES/SERVICE	20. QUANTITY ORDERED/ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT

* If quantity accepted by the Government is same as quantity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and enclose.	24. UNITED STATES OF AMERICA	25. TOTAL
BY: _____	CONTRACTING/ORDERING OFFICER	29. DIFFERENCES

26. QUANTITY IN COLUMN 20 HAS BEEN		27. SHIP NO.	28. D.O. VOUCHER NO.	30. INITIALS
<input type="checkbox"/> INSPECTED <input type="checkbox"/> RECEIVED <input type="checkbox"/> ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED		<input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL	32. PAID BY	33. AMOUNT VERIFIED CORRECT FOR
DATE _____ SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE _____		31. PAYMENT		34. CHECK NUMBER
36. I certify this account is correct and proper for payment.		<input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL		35. BILL OF LADING NO.
DATE _____ SIGNATURE AND TITLE OF CERTIFYING OFFICER _____				42. S/R VOUCHER NO.

37. RECEIVED AT	38. RECEIVED BY	39. DATE RECEIVED	40. TOTAL CONTAINERS	41. S/R ACCOUNT NUMBER	42. S/R VOUCHER NO.

# PERFORMANCE EVALUATION (ARCHITECT-ENGINEER)

A-E CONTRACTOR I.D. NUMBER  
(For ACASS use only)

1. A-E CONTRACT NUMBER

2. CONSTRUCTION CONTRACT NUMBER

**NOTE:** Be sure to complete Performance section on reverse. If additional space is necessary for any item, use Remarks section on reverse.

## TYPE OF EVALUATION

<b>3a. PHASE OF COMPLETION</b> <input type="checkbox"/> INTERIM ( _____ %) <input type="checkbox"/> FINAL	<b>3b. CHECK ONE</b> <input type="checkbox"/> DESIGN <input type="checkbox"/> ENGINEERING SERVICES <input type="checkbox"/> CONSTRUCTION	<b>3c. CHECK IF APPLICABLE</b> <input type="checkbox"/> TERMINATION (Explain in REMARKS on reverse)	<b>4. PROJECT NUMBER</b>	<b>5. DELIVERY ORDER NUMBER(S)</b> (if applicable)
--	---	--	--------------------------	---

<b>6. NAME AND ADDRESS OF A-E CONTRACTOR</b>	<b>7a. PROJECT TITLE AND LOCATION</b>  <b>7b. DESCRIPTION OF PROJECT IF NOT EXPLAINED BY TITLE</b>
--	--

## 8. NAME, ADDRESS AND PHONE NUMBER OF OFFICE RESPONSIBLE FOR:

<b>8a. SELECTION OF A-E CONTRACTOR</b>	<b>8b. NEGOTIATION/AWARD OF A-E CONTRACT</b>
<b>8c. ADMINISTRATION OF A-E CONTRACT</b>	<b>8d. ADMINISTRATION OF CONSTRUCTION CONTRACT</b>

## 9. A-E CONTRACT DATA

<b>9a. TYPE OF WORK PERFORMED BY A-E (DESIGN, STUDY, ETC.)</b>	<b>9b. TYPE OF A-E CONTRACT</b> <input type="checkbox"/> FIRM FIXED-PRICE <input type="checkbox"/> INDEFINITE DELIVERY/INDEFINITE QUANTITY <input type="checkbox"/> COST-REIMBURSEMENT <input type="checkbox"/> OTHER (Specify)							
<b>9c. PROJECT COMPLEXITY</b> <input type="checkbox"/> DIFFICULT <input checked="" type="checkbox"/> ROUTINE	<b>9d. PROFESSIONAL SERVICES CONTRACT</b>	<b>TOTAL A-E FEE</b>						
INITIAL A-E FEE \$ _____	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center;">A-E CONTRACT MODIFICATIONS</th> </tr> <tr> <th style="width: 50%; text-align: center;">NO.</th> <th style="width: 50%; text-align: center;">AMOUNT</th> </tr> <tr> <td style="height: 20px;"> </td> <td style="text-align: center;">\$</td> </tr> </table>	A-E CONTRACT MODIFICATIONS		NO.	AMOUNT		\$	\$ _____
A-E CONTRACT MODIFICATIONS								
NO.	AMOUNT							
	\$							
<b>9e. A-E CONTRACT AWARD DATE</b>	<b>9f. NEGOTIATED A-E CONTRACT COMPLETION DATE (OR NUMBER OF DAYS) (Including extensions)</b>	<b>9g. ACTUAL A-E CONTRACT COMPLETION DATE (OR NUMBER OF DAYS)</b>						
	9f1. COMPLETION DATE    9f2. NUMBER OF DAYS	9g1. COMPLETION DATE    9g2. NUMBER OF DAYS						

## 10. CONSTRUCTION CONTRACT DATA

*(Not applicable at completion of design or engineering services not involving construction.)*

<b>10a. CONSTRUCTION COSTS</b>	<b>10a(1). AUTHORIZED CONSTRUCTION COST</b> \$ _____	<b>10a(2). A-E ESTIMATE FOR BID ITEMS AWARDED</b> \$ _____	<b>10a(3). AWARD AMOUNT</b> \$ _____
<b>10b. DATA AT TIME OF CONSTRUCTION COMPLETION (Completion date _____)</b>	NUMBER	TOTAL COST	
<b>10b(1). CONSTRUCTION MODIFICATIONS</b>		\$ _____	
<b>10b(2). CONSTRUCTION MODIFICATIONS ARISING FROM DESIGN DEFICIENCIES</b>		\$ _____	

**11. A-E LIABILITY**     NONE     PENDING \$ \_\_\_\_\_     SETTLEMENT \$ \_\_\_\_\_

<b>12. OVERALL RATING</b> <input type="checkbox"/> EXCELLENT <input type="checkbox"/> ABOVE AVERAGE <input type="checkbox"/> AVERAGE <input type="checkbox"/> BELOW AVERAGE <input type="checkbox"/> POOR	<b>13. RECOMMENDED FOR FUTURE CONTRACTS?</b> <input type="checkbox"/> YES <input type="checkbox"/> CONDITIONALLY <input type="checkbox"/> NO (Explain no or conditional in REMARKS on reverse)
--	---

<b>14a. NAME, TITLE AND OFFICE OF RATING OFFICIAL</b>	<b>15a. NAME, TITLE AND OFFICE OF REVIEWING OFFICIAL</b>		
<b>14b. SIGNATURE</b>	<b>14c. DATE</b>	<b>15b. SIGNATURE</b>	<b>15c. DATE (Official Report date)</b>

AGENCY USE: (Distribution, etc.)

16.

**QUALITY OF A-E SERVICES BY DISCIPLINE**

(Completion mandatory for both DESIGN and CONSTRUCTION phases evaluations and Engineering Services Evaluations)

16a. DISCIPLINES (if applicable)	DESIGN/SERVICES			CONSTRUCTION			16b. DISCIPLINE, NAME AND ADDRESS OF KEY CONSULTANT(S) (if applicable)
	OUT- STANDING	SATIS- FACTORY	UNSATIS- FACTORY	OUT- STANDING	SATIS- FACTORY	UNSATIS- FACTORY	
ARCHITECTURAL							
STRUCTURAL							
CIVIL							
MECHANICAL							
ELECTRICAL							
FIRE PROTECTION							
SURVEY AND MAPPING							
COST ESTIMATING							
VALUE ENGINEERING							
ENVIRONMENTAL ENGINEERING							
GEOTECHNICAL ENGINEERING							
MASTER PLANNING							

17. DESIGN PHASE OR ENGINEERING SERVICES:  
(Quality of A-E Services Evaluation)

ATTRIBUTES	N/A	OUT- STANDING	SATIS- FACTORY	UNSATIS- FACTORY
THOROUGHNESS OF SITE INVESTIGATION				
QUALITY CONTROL PROCEDURES AND EXECUTION				
PLANS/SPECS ACCURATE AND COORDINATED				
PLANS CLEAR AND DETAILED SUFFICIENTLY				
MANAGEMENT AND ADHERENCE TO SCHEDULES				
MEETING COST LIMITATIONS				
SUITABILITY OF DESIGN OR STUDY RESULTS				
SOLUTION ENVIRONMENTALLY SUITABLE				
COOPERATIVENESS AND RESPONSIVENESS				
QUALITY OF BRIEFING AND PRESENTATIONS				

18. HOW MANY 100% FINAL RESUBMITTALS WERE REQUIRED BECAUSE OF POOR A-E PERFORMANCE? \_\_\_\_\_

19. CONSTRUCTION PHASE:  
(Quality of A-E Services Evaluation)

ATTRIBUTES	N/A	OUT- STANDING	SATIS- FACTORY	UNSATIS- FACTORY
PLANS CLEAR AND DETAILED SUFFICIENTLY				
DRAWINGS REFLECT TRUE CONDITIONS				
PLANS/SPECS ACCURATE AND COORDINATED				
DESIGN CONSTRUCTIBILITY				
COOPERATIVENESS AND RESPONSIVENESS				
TIMELINESS AND QUALITY OF PROCESSING SUBMITTALS				
PRODUCT AND EQUIPMENT SELECTIONS READILY AVAILABLE				
TIMELINESS OF ANSWERS TO DESIGN QUESTIONS				
FIELD CONSULTATION AND INVESTIGATIONS				
QUALITY OF CONSTRUCTION SUPPORT SERVICES				

20. REMARKS (Attach additional Sheet(s) or Documentation if necessary)

**SPECIAL PROJECT REQUEST**

NAVFAC 11014/64 (REV. 5-74)  
 Supersedes NAVFAC 9-11014/64 (11-68)  
 BAN 0105-LF-003-4230

**STEP TWO SUBMISSION**

<b>1. ACTIVITY BNDR NO.</b>	<b>ACTIVITY NAME AND LOCATION</b>	<b>DATE SUBMITTED</b>
<b>2. PROJECT NO.</b>	<b>TITLE</b>	
<b>3. TYPE</b>		
a. <input type="checkbox"/> MAINT./REPAIR	b. <input type="checkbox"/> MINOR CONSTRUCTION/ ALTERATION	c. <input type="checkbox"/> AIR CONDITIONING
		<input type="checkbox"/> EQUIPMENT INSTALLATION
<b>4. DESCRIBE AND STATE FUNCTION OF FACILITY</b>		<b>6. PROPERTY RECORD CARD NO.</b>
		<b>6. NAVY CATEGORY CODE</b>
		<b>6. BLDG. OR STRUCTURE NO.</b>

**5. WHAT IS THE EFFECT OF THIS PROJECT ON THE MISSION OF THE ACTIVITY?**

**8. THE REQUIREMENT FOR THE FACILITY IS BASED ON:**

a.  A CHANGE IN MISSION    b.  FULL-TIME CONTINUING NEED    c.  3 TO 5 YEAR NEED    d.  LESS THAN 3 YEARS' NEED    e.  CURRENTLY REQUIRED LESS THAN 50% OF TIME    f.  RESERVED FOR FUTURE REQUIREMENTS

**9. EST. FUNDED COST**    **9. EST. PROJECT COST**    **9. EST. PLANNING COST**    **9. TOTAL FUNDS REQUESTED**    **9. EST. FACIL. REPL. COST**

\$ \_\_\_\_\_ \$ \_\_\_\_\_ \$ \_\_\_\_\_ \$ \_\_\_\_\_ \$ \_\_\_\_\_

**8. DATE FACILITY CONSTRUCTED**    **9. IS FACILITY ON AN APPROVED BASIC FACILITY REQUIREMENTS LIST? If "NO," how was need determined?**

YES     NO

**10. IS PROJECT LISTED ON ANNUAL INSPECTION SUMMARY? If answer is "NO," and AIS is applicable, explain exclusion.**

YES     NO     N.A.

**11. DESCRIBE CONDITION TO BE CORRECTED, OR PROBLEM TO BE SOLVED WITH PROPOSED SOLUTION. Attach additional description if necessary, ONE PAGE ONLY.**

**12. WHY IS THE PROPOSED SOLUTION BEST - AND WHAT ALTERNATIVES WERE CONSIDERED?**

**13. WERE ANY NON-NAVY EXPERTS INVITED TO REVIEW THIS PROBLEM AND THIS SOLUTION? Explain effect on solution.**

a.  YES    b.  NO

<b>14. HAS EFD DESIGN DIVISION REVIEWED SOLUTION?</b>	a. <input type="checkbox"/> YES    b. <input type="checkbox"/> NO
<b>15. CAN ANOTHER FACILITY BE ECONOMICALLY ADAPTED FOR THIS FUNCTION?</b>	a. <input type="checkbox"/> YES    b. <input type="checkbox"/> NO

**16. CAN PROJECT BE FUNDED IN PHASES? How? How many?**

a.  YES    b.  NO

**17. THIS PROJECT IS THE RESULT OF**

a.  INADEQUATE MAINTENANCE    b.  FACILITY AGE    c.  DEFICIENT CONSTR.    d.  DEFICIENT DESIGN    e.  OTHER: \_\_\_\_\_

**18. HAS THIS SPECIFIC PROBLEM BEEN CORRECTED PREVIOUSLY?**

a.  YES    b.  NO    When?

**HOW LONG WILL PROPOSED CORRECTIVE ACTION LAST? \_\_\_\_\_ YEARS**

19. ARE COMPONENTS BEING INCREASED IN SIZE OR CAPACITY? Explain the difference, including cost.

a.  YES b.  NO

20. ARE MATERIALS PROPOSED FOR USE THE SAME AS THOSE EXISTING? If "NO," explain the difference, including cost.

a.  YES b.  NO

21. PROJECT IS PLANNED TO BE ACCOMPLISHED BY

a.  STATION LABOR b.  CONTRACT

22. HAS A PROJECT EVER BEEN SUBMITTED FOR THE REPLACEMENT OF THIS OR SIMILAR FACILITIES? Check and explain if "YES."

a.  YES b.  NO When?

23. ANTICIPATED SAVINGS IF PROJECT IS DONE THIS YEAR AS COMPARED TO A DEFERRAL OF ONE YEAR.

PROBABLE INCREASE IN PROJECT COST FOR ANY JUSTIFIABLE REASON

REDUCTION IN CURRENT MAINT. COST

REDUCTION IN CURRENT OPERATIONS COST

\$

\$

\$

JUSTIFY ANY SAVINGS INDICATED

WHAT IS PAY BACK PERIOD OF PROJECT? (In years)

WILL ACCOMPLISHMENT GENERATE REQUIREMENTS FOR ADDITIONAL M&O FUNDS OR PERSONNEL?

a.  NO b.  YES Est. Amt.

24. WHAT WOULD BE THE EFFECT OF DEFERRING THE PROJECT ONE YEAR?

25. IF THE PROJECT IS NOT ACCOMPLISHED NOW, IN HOW MANY YEARS WILL THERE BE SERIOUS DAMAGE TO THE FACILITY AND/OR ITS CONTENTS OR IMPAIRMENT TO ESSENTIAL OPERATIONS? Explain, include loss value to facility and/or contents.

YEARS BEFORE SERIOUS DAMAGE OCCURS \_\_\_\_\_.

26. HAS THE REDUCED UTILIZATION OF THIS SPECIFIC FACILITY AFFECTED A LARGE FACILITY SYSTEM OPERATION? Explain.

a.  YES b.  NO BY HOW MUCH? \_\_\_\_\_ %.

27. ARE THERE ANY OTHER FACTORS INVOLVED? Check and explain.

a.  MORALE b.  HEALTH c.  PUBLIC RELATIONS d.  SAFETY e.  FIRE PROTECTION f.  SECURITY g.  OTHER

28. CERTIFICATION BY RESPONSIBLE OFFICER AT ACTIVITY: I am personally cognizant of the need for, the essentiality of, and the proposed method of accomplishment of this project and certify that the above information is correct, and that this project meets all criteria specified in OPNAVINST 11010.20 and subsequent changes thereto.

SIGNATURE

TITLE

DATE

29. EFD TECHNICAL VALIDATION (If required) (see para 7303, OPNAVINST 11010.20C)

SIGNATURE

TITLE

DATE

ENCLOSURES:

a.  ENGINEERING EST. (NAVFAC 2417) b.  LOCATION PLAN(S) c.  DRAWINGS d.  PHOTOGRAPHS

\*NOT applicable to Minor Construction, Alterations, or Equipment Installation

1. COMPONENT	<b>FY 19__ MILITARY CONSTRUCTION PROJECT DATA</b>			2. DATE		
3. INSTALLATION AND LOCATION			4. PROJECT TITLE			
5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER	8. PROJECT COST (\$000)			
<b>9. COST ESTIMATES</b>						
ITEM			U/M	QUANTITY	UNIT COST	COST (\$000)
10. DESCRIPTION OF PROPOSED CONSTRUCTION						



1. COMPONENT	<b>FY 19__ MILITARY CONSTRUCTION PROJECT DATA</b>	2. DATE
3. INSTALLATION AND LOCATION		
4. PROJECT TITLE	5. PROJECT NUMBER	

NAVAL FACILITIES ENGINEERING COMMAND  
CONTRACTOR'S INVOICE

INVOICE DATE \_\_\_\_\_

INVOICE NUMBER \_\_\_\_\_

ESTIMATED U. S. EXPENDITURES APPLICABLE THIS INVOICE

FROM:

TO: Officer in Charge of Construction  
VIA: Resident Officer in Charge of Construction

(A) U. S. END PRODUCTS	\$ _____
(B) U. S. SERVICES	\$ _____
(C) TRANSPORTATION ON U. S. BARGE	\$ _____
TOTAL DOLLAR RETURN	\$ _____

1. Below is a Statement of Performance under Contract \_\_\_\_\_ at (Station) \_\_\_\_\_

The enclosure provides breakdown of this statement of performance.

- A. Total value of contract through change \_\_\_\_\_ \$ \_\_\_\_\_
- B. Percentage of performance complete \_\_\_\_\_ %
- C. Value of completed performance \$ \_\_\_\_\_
- D. Less: Total of prior invoices \$ \_\_\_\_\_
- E. Amount of this invoice \$ \_\_\_\_\_

Signature and Title \_\_\_\_\_

FIRST ENDORSEMENT

Date \_\_\_\_\_

FROM: ROICC \_\_\_\_\_  
TO: \_\_\_\_\_

1. Payment is recommended as follows:

- A. Amount of work completed to \_\_\_\_\_ \$ \_\_\_\_\_
- B. Less: Total of prior invoices \$ \_\_\_\_\_
- C. Amount of this invoice \$ \_\_\_\_\_
- D. Less: Retention this invoice (0 to 10% of Item C) \$ \_\_\_\_\_
- Total retention prior invoices \$ \_\_\_\_\_
- Other deductions \$ \_\_\_\_\_
- E. Sub-total \$ \_\_\_\_\_
- F. Less previous payments \$ \_\_\_\_\_
- G. Recommended amount for \_\_\_\_\_ payment \$ \_\_\_\_\_

2. Elapsed contract time \_\_\_\_\_ %

3.

Signature and Title \_\_\_\_\_

1ROICC

Pursuant to authority vested in me, I certify that this invoice is correct and proper for payment.

DATE \_\_\_\_\_ Signature and Title \_\_\_\_\_

1Authorized Certifying Officer

<u>ACRN</u>	<u>APPN/SUBHEAD</u>	<u>OC</u>	<u>BCN</u>	<u>SA</u>	<u>AAA</u>	<u>TT</u>	<u>PAA</u>	<u>COST CODE</u>	<u>AMOUNT</u>
-------------	---------------------	-----------	------------	-----------	------------	-----------	------------	------------------	---------------

1If the ability to certify and authority to recommend are combined in one person, one signature only is necessary; otherwise the ROICC will sign in the space provided.

# A-E CONTRACT PERFORMANCE STATEMENT

Page \_\_\_\_\_ of \_\_\_\_\_

CONTRACT TITLE/LOCATION:								
CONTRACT NUMBER:			A-E FIRM:			INVOICE DATE:		
COST CATEGORY	A-E SERVICE DESCRIPTION	TOTAL CONTRACTED AMOUNT FOR EACH SERVICE	AMOUNT INVOICED TO DATE FOR A-E SYCS INCLD THIS & ALL PREVIOUS INVOICES		TOTAL PAID FOR A-E SERVICES ON ALL PREVIOUS INVOICES		ADDITIONAL AMOUNT DUE FOR A-E SERVICES SINCE LAST INVOICE	
			(6) + (8)	(4)/(3)	(4) ON PRV INV	(6)/(3)	(4) - (6)	(8)/(3)
(1)	(2)	(3) FEE	(4) FEE	(6) \$	(6) FEE	(7) \$	(8) FEE	(9) \$
<b>PAY THIS AMOUNT:</b>								

Certified for payment, as noted, by \_\_\_\_\_ Date: \_\_\_\_\_

CONTRACTOR'S RELEASE UNDER CONTRACT \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS: In consideration of the premise and the sum of \_\_\_\_\_  
\_\_\_\_\_  
(\$ \_\_\_\_\_)  
lawful money of the United States of America (hereinafter called the "Government") \_\_\_\_\_  
\_\_\_\_\_  
(\$ \_\_\_\_\_)  
of which has already been paid and \_\_\_\_\_  
\_\_\_\_\_  
(\$ \_\_\_\_\_) of which is to be paid  
by the Government under the above-mentioned contract, the undersigned Contractor does, and by the receipt of said sum shall,  
for itself, its successors and assigns, remise, release and forever discharge the Government, its officers, agents, and em-  
ployees, of and from all liabilities, obligations and claims whatsoever in law and in equity under or arising out of said  
contract.

IN WITNESS WHEREOF, this release has been executed this \_\_\_\_\_ day of \_\_\_\_\_ 19 \_\_\_\_\_

WITNESSES:

\_\_\_\_\_  
(Contractor)

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

NOTE: In case of a corporation, witnesses are not required,  
but certificate below must be completed.

CERTIFICATE

I, \_\_\_\_\_, certify that I am the \_\_\_\_\_ secretary  
of the corporation named as Contractor in the foregoing release; that \_\_\_\_\_  
who signed said release on behalf of the Contractor was then \_\_\_\_\_ of said corporation;  
that said release was duly signed for and in behalf of said corporation by authority of its governing body and is within the  
scope of its corporate powers.

(Corporate Seal)



# REVIEW OF CONTRACTOR'S SUBMITTALS REQUEST

14ND-OICC FAR EAST 433C (4-83)

FROM ROICC DATE

TO  O4  
 A-E  
 PWC

1. IT IS REQUESTED THAT THE ENCLOSED CONTRACTOR'S SUBMITTAL FOR THE CONTRACT LISTED BELOW BE REVIEWED AND RETURNED TO ROICC. A-E SHALL DETERMINE WHETHER THE SUBMITTAL COMPLIES WITH THE CONSTRUCTION CONTRACT REQUIREMENTS-SEE A-E GUIDE, SECTION 4.3.

TITLE CONTRACT NO.  
SPEC NO.

ENCLOSURE (S)

SIGNATURE

FROM  O4 DATE  
 A-E  
 PWC

TO ROICC

COMMENTS

SIGNATURE

COPY TO:

**COST ESTIMATE**

DATE PREPARED

SHEET OF

ACTIVITY AND LOCATION

CONSTRUCTION CONTRACT NO.

IDENTIFICATION NUMBER

ESTIMATED BY

CATEGORY CODE NUMBER

PROJECT TITLE

STATUS OF DESIGN

PED  30%  100%  FINAL  Other (Specify) \_\_\_\_\_

JOB ORDER NUMBER

ITEM DESCRIPTION	QUANTITY		MATERIAL COST		LABOR COST		ENGINEERING ESTIMATE	
	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL

**PROPOSAL/ESTIMATE FOR CONTRACT MODIFICATION**

**DATE:**

NAVFAC 4330/43 (8/88)

**CONTRACT TITLE:**

**CONTRACT NO:**

**ROICC OFFICE:**

**DESCRIPTION:**

		PRIME CONTRACTOR'S WORK		Revisions/Comments
1. Direct Materials				
2. Sales Tax on Materials	% of line 1	%		
3. Direct Labor				
4. Insurance, Taxes, and Fringe Benefits	% of line 3	%		
5. Rental Equipment				
6. Sales Tax on Rental Equipment	% of line 5	%		
7. Equipment Ownership and Operating Expenses				
8. SUBTOTAL (add lines 1 - 7)				
9. Field Overhead	10.00% of line 8	%		
10. SUBTOTAL (Add Lines 8 & 9)				

Prime Remarks:

		SUB-CONTRACTOR'S WORK		Revisions/Comments
11. Direct Materials				
12. Sales Tax on Materials	% of line 11	%		
13. Direct Labor				
14. Insurance, Taxes, and Fringe Benefits	% of line 13	%		
15. Rental Equipment				
16. Sales Tax on Rental Equipment	% of line 15	%		
17. Equipment Ownership and Operating Expenses				
18. SUBTOTAL (add lines 11 - 17)				
19. Field Overhead	10.00% of line 18	%		
20. SUBTOTAL (add lines 18 & 19)				
21. Home Office Overhead	3.00% of line 20	%		
22. Profit	% of line 20	%		
23. SUBTOTAL (Add Lines 20 - 22)				

Sub's Remarks:

		SUMMARY		Revisions/Comments
24. Prime Contractor's Work (from line 10)				
25. Sub-contractor's Work (from line 23)				
26. SUBTOTAL (add lines 24 & 25)				
27. Prime Overhead on sub-contractor	5.00% of line 25	%		
28. Prime's Home Office Overhead	3.00% of line 24	%		
29. Prime's Profit	% of line 26	%		
30. SUBTOTAL (add lines 26 - 29)				
31. Prime Contractor's Bond Premium	% of line 30	%		
32. TOTAL COST (Add Lines 30 & 31)				

Estimated time extension and justification

Prime Contractor name:

Sub-contractor name:

Signature & Title of preparer

Date



SAMPLE

MEMORANDUM

From: (Name of A-E Firm)

To: Contracting Officer, (Name of OICC FE organization that will advertise the construction contract)

Subj: CONTRACT N\_\_\_\_\_ - \_\_\_ - \_\_\_ - \_\_\_\_\_, (Name of Project)

1. I have reviewed the contract documents for the subject project and certify that the construction contract documents are in full compliance with the Department of Defense Authorization Act for Fiscal Year 1993, Section (P.L. 102-484), which prohibits the use of Class I Ozone Depleting Substances. Furthermore, the construction contract documents do not specify equipment which utilize Class I ozone depleting substances.

Certified by: \_\_\_\_\_  
(Typed Name of Certifying  
Individual)

Date: \_\_\_\_\_

# Architect-Engineer and Related Services Questionnaire

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the FAR Secretariat (VRS), Office of Federal Acquisition and Regulatory Policy, GSA, Washington, D.C. 20405; and to the Office of Management and Budget, Paperwork Reduction Project (9000-0004), Washington, D.C. 20503.

### Purpose:

The policy of the Federal Government in acquiring architectural, engineering, and related professional services is to encourage firms lawfully engaged in the practice of those professions to submit annually a statement of qualifications and performance data. Standard Form 254, "Architect-Engineer and Related Services Questionnaire," is provided for that purpose. Interested A-E firms (including new, small, and/or minority firms) should complete and file SF 254's with each Federal agency and with appropriate regional or district offices for which the A-E is qualified to perform services. The agency head for each proposed project shall evaluate these qualification resumes, together with any other performance data on file or requested by the agency, in relation to the proposed project. The SF 254 may be used as a basis for selecting firms for discussions, or for screening firms preliminary to inviting submission of additional information.

### Definitions:

**"Architect-Engineer Services"** are defined in Part 36 of the Federal Acquisition Regulation.

**"Parent Company"** is that firm, company, corporation, association or conglomerate which is the major stockholder or highest tier owner of the firm completing this questionnaire; i.e., Firm A is owned by Firm B which is, in turn, a subsidiary of Corporation C. The "parent company" of Firm A is Corporation C.

**"Principals"** are those individuals in a firm who possess legal responsibility for its management. They may be owners, partners, corporate officers, associates, administrators, etc.

**"Discipline,"** as used in this questionnaire, refers to the primary technological capability of individuals in the responding firm. Possession of an academic degree, professional registration, certification, or extensive experience in a particular field of practice normally reflects an individual's primary technical discipline.

**"Joint Venture"** is a collaborative undertaking by two or more firms or individuals for which the participants are both jointly and individually responsible.

**"Consultant,"** as used in this questionnaire, is a highly specialized individual or firm having significant input and responsibility for certain aspects of a project and possessing unusual or unique capabilities for assuring success of the finished work.

**"Prime"** refers to that firm which may be coordinating the concerted and complementary inputs of several firms, individuals or related services to produce a completed study or facility. The "prime" would normally be regarded as having full responsibility and liability for quality of performance by itself as well as by subcontractor professionals under its jurisdiction.

**"Branch Office"** is a satellite, or subsidiary extension, of a headquarters office of a company, regardless of any differences in name or legal structure of such a branch due to local or state laws. "Branch offices" are normally subject to the management decisions, bookkeeping, and policies of the main office.

### Instructions for Filing (Numbers below correspond to numbers contained in form):

1. Type accurate and complete name of submitting firm, its address, and zip code.
  - 1a. Indicate whether form is being submitted in behalf of a parent firm or a branch office. (Branch office submissions should list only personnel in, and experience of, that office.)
2. Provide date the firm was established under the name shown in question 1.
3. Show date on which form is prepared. All information submitted shall be current and accurate as of this date.
4. Enter type of ownership, or legal structure, of firm (sole proprietor, partnership, corporation, joint venture, etc.).

Check appropriate boxes indicating if firm is (a) a small business concern; (b) a small business concern owned and operated by socially and economically disadvantaged individuals; and (c) Woman-owned (See 48 CFR 19.101 and 52.219-9).
5. Branches of subsidiaries of large or parent companies, or conglomerates, should insert name and address of highest-tier owner.
  - 5a. If present firm is the successor to, or outgrowth of, one or more predecessor firms, show name(s) of former entity(ies) and the year(s) of their original establishment.
6. List not more than two principals from submitting firm who may be contacted by the agency receiving this form. (Different principals may be listed on forms going to another agency.) Listed principals must be empowered to speak for the firm on policy and contractual matters.
7. Beginning with the submitting office, list name, location, total number of personnel, and telephone numbers for all associated or branch offices, (including any headquarters or foreign offices) which provide A-E and related services.
  - 7a. Show total personnel in all offices. (Should be sum of all personnel, all branches.)
8. Show total number of employees, by discipline, in submitting office. (\*If form is being submitted by main or headquarters office, firm should list total employees, by discipline, in all offices.) While some personnel may be qualified in several disciplines, each person should be counted only once in accord with his or her primary function. Include clerical personnel as "administrative." Write in any additional disciplines--sociologists, biologists, etc. -- and number of people in each, in blank spaces.

# Architect-Engineer and Related Services Questionnaire

9. Using chart (below) insert appropriate index number to indicate range of professional services fees received by submitting firm each calendar year for last five years, most recent year first. Fee summaries should be broken down to reflect the fees received each year for (a) work performed directly for the Federal Government (not including grant and loan projects) or as a sub to other professionals performing work directly for the Federal Government; (b) all other domestic work, U.S. and possessions, including Federally-assisted projects, and (c) all other foreign work.

### Ranges of Professional Services Fees

INDEX	INDEX
1. Less than \$100,000	5. \$1 million to \$2 million
2. \$100,000 to \$250,000	6. \$2 million to \$5 million
3. \$250,000 to \$500,000	7. \$5 million to \$10 million
4. \$500,000 to \$1 million	8. \$10 million or greater

10. Select and enter, in numerical sequence, **not more than thirty (30)** "Experience Profile Code" numbers from the listing (next page) which most accurately reflect submitting firm's demonstrated technical capabilities and project experience. **Carefully review list.** (It is recognized some profile codes may be part of other services or projects contained on list; firms are encouraged to select profile codes which best indicate type and scope of services provided on past projects.) For each code number, show total number of projects and gross fees (in thousands) received for profile projects performed by firm during past few years. If firm has one or more capabilities not included on list, insert same in blank spaces at end of list and show numbers in question 10 on the form. In such cases, the filled-in listing **must** accompany the complete SF 254 when submitted to the Federal agencies.

11. Using the "Experience Profile Code" numbers in the same sequence as entered in item 10, give details of at least one recent (within last five years) representative project for each code number, up to a **maximum** of thirty (30) separate projects, or portions of projects, for which firm was responsible. (Project examples may be used more than once to illustrate different services rendered on the same job. Example: a dining hall may be part of an auditorium or educational facility.) Firms which select less than thirty "profile codes" may list two or more project examples (to illustrate specialization) for each code number so long as total of all project examples does not exceed thirty (30). After each code number in question 11, show: (a) whether firm was "P," the prime professional, or "C," a consultant, or "JV," part of a joint venture on that particular project (new firms, in existence less than five (5) years may use the symbol "IE" to indicate "Individual Experience" as opposed to firm experience); (b) provide name and location of the specific project which typifies firm's (or individual's) performance under that code category; (c) give name and address of the

owner of that project (if government agency indicate responsible office); (d) show the estimated construction cost (or other applicable cost) for that portion of the project for which the firm was primarily responsible. (Where no construction was involved, show approximate cost of firm's work); and (e) state year work on that particular project was, or will be, completed.

12. The completed SF 254 should be signed by a principal of the firm, preferably the chief executive officer.

13. Additional data, brochures, photos, etc. should not accompany this form unless specifically requested.

**NEW FIRMS** (not reorganized or recently-amalgamated firms) are eligible and encouraged to seek work from the Federal Government in connection with performance of projects for which they are qualified. Such firms are encouraged to complete and submit Standard Form 254 to appropriate agencies. Questions on the form dealing with personnel or experience may be answered by citing experience and capabilities of individuals in the firm, based on performance and responsibility while in the employ of others. In so doing, notation of this fact should be made on the form. In question 9, write in "N/A" to indicate "not applicable" for those years prior to firm's organization.

**Expert Profile Code Numbers  
for use with questions 10 and 11**

- 001 Acoustics, Noise Abatement
- 002 Aerial Photogrammetry
- 003 Agricultural Development; Grain Storage; Farm Mechanization
- 004 Air Pollution Control
- 005 Airports; Navals; Airport Lighting; Aircraft Fueling
- 006 Airports; Terminals & Hangars; Freight Handling
- 007 Arctic Facilities
- 008 Auditoriums & Theatres
- 009 Automation; Controls; Instrumentation
- 010 Barracks; Dormitories
- 011 Bridges
- 012 Cemeteries (*Planning & Relocation*)
- 013 Chemical Processing & Storage
- 014 Churches; Chapels
- 015 Codes; Standards; Ordinances
- 016 Cold Storage; Refrigeration; Fast Freeze
- 017 Commercial Building (*low rise*); Shopping Centers
- 018 Communications Systems; TV; Microwave
- 019 Computer Facilities; Computer Service
- 020 Conservation and Resource Management
- 021 Construction Management
- 022 Corrosion Control; Cathodic Protection; Electrolysis
- 023 Cost Estimating
- 024 Dams (*Concrete; Arch*)
- 025 Dams (*Earth; Rock*); Dikes; Levees
- 026 Desalination (*Process & Facilities*)
- 027 Dining Halls; Clubs; Restaurants
- 028 Ecological & Archeological Investigations
- 029 Educational Facilities; Classrooms
- 030 Electronics
- 031 Elevators; Escalators; People-Movers
- 032 Energy Conservation; New Energy Sources
- 033 Environmental Impact Studies, Assessments or Statements
- 034 Fallout Shelters; Blast-Resistant Design
- 035 Field Houses; Gyms; Stadiums
- 036 Fire Protection
- 037 Fisheries; Fish Ladders
- 038 Forestry & Forest Products
- 039 Garages; Vehicle Maintenance Facilities; Parking Decks
- 040 Gas Systems (*Propane; Natural, Etc.*)
- 041 Graphic Design

- 042 Harbors; Jetties; Piers, Ship Terminal Facilities
- 043 Heating; Ventilating; Air Conditioning
- 044 Health Systems Planning
- 045 Highrise; Air-Flights-Type Buildings
- 046 Highways; Streets; Airfield Paving Parking Lots
- 047 Historical Preservation
- 048 Hospital & Medical Facilities
- 049 Hotels; Motels
- 050 Housing (*Residential, Multi-Family; Apartments; Condominiums*)
- 051 Hydraulics & Pneumatics
- 052 Industrial Buildings; Manufacturing Plants
- 053 Industrial Processes; Quality Control
- 054 Industrial Waste Treatment
- 055 Interior Design; Space Planning
- 056 Irrigation; Drainage
- 057 Judicial and Courtroom Facilities
- 058 Laboratories; Medical Research Facilities
- 059 Landscape Architecture
- 060 Libraries; Museums; Galleries
- 061 Lighting (*Interiors; Display; Theatre, Etc.*)
- 062 Lighting (*Exteriors; Streets; Memorials; Athletic Fields, Etc.*)
- 063 Materials Handling Systems; Conveyors; Sorters
- 064 Metallurgy
- 065 Microclimatology; Tropical Engineering
- 066 Military Design Standards
- 067 Mining & Mineralogy
- 068 Missile Facilities (*Silos; Fuels; Transport*)
- 069 Modular Systems Design; Pre-Fabricated Structures or Components
- 070 Naval Architecture; Off-Shore Platforms
- 071 Nuclear Facilities; Nuclear Shielding
- 072 Office Buildings; Industrial Parks
- 073 Oceanographic Engineering
- 074 Ordnance; Munitions; Special Weapons
- 075 Petroleum Exploration; Refining
- 076 Petroleum and Fuel (*Storage and Distribution*)
- 077 Pipelines (*Cross-Country - Liquid & Gas*)
- 078 Planning (*Community, Regional, Areawide and State*)
- 079 Planning (*Site, Installation, and Project*)
- 080 Plumbing & Piping Design
- 081 Pneumatic Structures, Air-Support Buildings
- 082 Postal Facilities
- 083 Power Generation, Transmission, Distribution
- 084 Prisons & Correctional Facilities
- 085 Product, Machine & Equipment Design

- 086 Radar; Sonar; Radio & Radar Telescopes
- 087 Railroad; Rapid Transit
- 088 Recreation Facilities (*Parks, Marinas, Etc.*)
- 089 Rehabilitation (*Buildings; Structures; Facilities*)
- 090 Resource Recovery; Recycling
- 091 Radio Frequency Systems & Shieldings
- 092 Rivers; Canals; Waterways; Flood Control
- 093 Safety Engineering; Accident Studies; OSHA Studies
- 094 Security Systems; Intruder & Smoke Detection
- 095 Seismic Designs & Studies
- 096 Sewage Collection, Treatment and Disposal
- 097 Soils & Geologic Studies; Foundations
- 098 Solar Energy Utilization
- 099 Solid Wastes; Incineration; Land Fill
- 100 Special Environments; Clean Rooms, Etc.
- 101 Structural Design; Special Structures
- 102 Surveying; Platting; Mapping; Flood Plain Studies
- 103 Swimming Pools
- 104 Storm Water Handling & Facilities
- 105 Telephone Systems (*Rural; Mobile; Intercom, Etc.*)
- 106 Testing & Inspection Services
- 107 Traffic & Transportation Engineering
- 108 Towers (*Self-Supporting & Guyed Systems*)
- 109 Tunnels & Subways
- 110 Urban Renewals; Community Development
- 111 Utilities (*Gas & Steam*)
- 112 Value Analysis; Life-Cycle Costing
- 113 Warehouses & Depots
- 114 Water Resources; Hydrology; Ground Water
- 115 Water Supply; Treatment and Distribution
- 116 Wind Tunnels; Research/Testing Facilities Design
- 117 Zoning; Land Use Studies
- 201 \_\_\_\_\_
- 202 \_\_\_\_\_
- 203 \_\_\_\_\_
- 204 \_\_\_\_\_
- 205 \_\_\_\_\_

**STANDARD  
FORM (SF)**

**254**

Architect-Engineer  
and Related Services  
Questionnaire

1. Firm Name/Business Address:

2. Year Present Firm  
Established

3. Date Prepared:

4. Specify type of ownership and check below, if  
applicable.

A. Small Business

B. Small Disadvantaged Business

C. Woman-owned Business

1a. Submittal is for  Parent Company  Branch or Subsidiary Office

5. Name of Parent Company, if any:

5a. Former Parent Company Name(s), if any, and Year(s) Established:

6. Names of not more than Two Principals to Contact: Title/Telephone

1)

2)

7. Present Offices: City / State / Telephone / No. Personnel Each Office

7a. Total Personnel \_\_\_\_\_

8. Personnel by Discipline: (List each person only once, by primary function.)

<input type="checkbox"/> Administrative	<input type="checkbox"/> Electrical Engineers	<input type="checkbox"/> Oceanographers	_____
<input type="checkbox"/> Architects	<input type="checkbox"/> Estimators	<input type="checkbox"/> Planners: Urban/Regional	_____
<input type="checkbox"/> Chemical Engineers	<input type="checkbox"/> Geologists	<input type="checkbox"/> Sanitary Engineers	_____
<input type="checkbox"/> Civil Engineers	<input type="checkbox"/> Hydrologists	<input type="checkbox"/> Soils Engineers	_____
<input type="checkbox"/> Construction Inspectors	<input type="checkbox"/> Interior Designers	<input type="checkbox"/> Specification Writers	_____
<input type="checkbox"/> Draftsmen	<input type="checkbox"/> Landscape Architects	<input type="checkbox"/> Structural Engineers	_____
<input type="checkbox"/> Ecologists	<input type="checkbox"/> Mechanical Engineers	<input type="checkbox"/> Surveyors	_____
<input type="checkbox"/> Economists	<input type="checkbox"/> Mining Engineers	<input type="checkbox"/> Transportation Engineers	_____

9. Summary of Professional Services Fees  
Received: (Insert index number)

Last 5 Years (most recent year first)

19 \_\_\_\_\_ 19 \_\_\_\_\_ 19 \_\_\_\_\_ 19 \_\_\_\_\_ 19 \_\_\_\_\_

Direct Federal contract work, including overseas \_\_\_\_\_

All other domestic work \_\_\_\_\_

All other foreign work\* \_\_\_\_\_

\*Firms interested in foreign work, but without such experience, check here:

Ranges of Professional Services Fees  
INDEX

1. Less than \$100,000
2. \$100,000 to \$250,000
3. \$250,000 to \$500,000
4. \$500,000 to \$1 million
5. \$1 million to \$2 million
6. \$2 million to \$5 million
7. \$5 million to \$10 million
8. \$10 million or greater

10. Firm's Project Experience, Last 5 Years								
Profile Code	Number of Projects	Total Gross Fees (in thousands)	Profile Code	Number of Projects	Total Gross Fees (in thousands)	Profile Code	Number of Projects	Total Gross Fees (in thousands)
1)			11)			21)		
2)			12)			22)		
3)			13)			23)		
4)			14)			24)		
5)			15)			25)		
6)			16)			26)		
7)			17)			27)		
8)			18)			28)		
9)			19)			29)		
10)			20)			30)		

11. Project Examples, Last 5 Years					
Profile Code	"P," "C," "JV," or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in thousands)	Completion Date (Actual or Estimated)
		1			
		2			
		3			
		4			
		5			
		6			
		7			

		8			
		9			
		10			
		11			
		12			
		13			
		14			
		15			
		16			
		17			
		18			
		19			

	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		

12. The foregoing is a statement of facts

Date:

Signature: \_\_\_\_\_ Typed Name and Title: \_\_\_\_\_



# Architect-Engineer and Related Services Questionnaire for Specific Project

Public reporting burden for this collection of information is estimated to average 1.2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the FAR Secretariat (VRS), Office of Federal Acquisition and Regulatory Policy, GSA, Washington, D.C. 20405; and to the Office of Management and Budget, Paperwork Reduction Project (9000-0005), Washington, D.C. 20503.

## Purpose:

This form is a supplement to the "Architect-Engineer and Related Services Questionnaire" (SF 254). Its purpose is to provide additional information regarding the qualifications of interested firms to undertake a specific Federal A-E project. Firms, or branch offices of firms, submitting this form should enclose (or already have on file with the appropriate office of the agency) a current (within the past year) and accurate copy of the SF 254 for that office.

The procurement official responsible for each proposed project may request submission of the SF 255 "Architect-Engineer and Related Services Questionnaire for Specific Project" in accord with applicable civilian and military procurement regulations and shall evaluate such submissions, as well as related information contained on the Standard Form 254, and any other performance data on file with the agency, and shall select firms for subsequent discussions leading to contract award in conformance with Public Law 92-582. This form should only be filed by an architect-engineer or related services firm when requested to do so by the agency or by a public announcement. Responses should be as complete and accurate as possible, contain data relative to the specific project for which you wish to be considered, and should be provided, by the required due date, to the office specified in the request or public announcement.

This form will be used only for the specified project. Do not refer to this submittal in response to other requests or public announcements.

## Definitions:

**"Architect-Engineer Services"** are defined in Part 36 of the Federal Acquisition Regulation.

**"Principals"** are those individuals in a firm who possess legal responsibility for its management. They may be owners, partners, corporate officers, associates, administrators, etc.

**"Discipline,"** as used in this questionnaire, refers to the primary technological capability of individuals in the responding firm. Possession of an academic degree, professional registration, certification, or extensive experience in a particular field of practice normally reflects an individual's primary technical discipline.

**"Joint Venture"** is a collaborative undertaking by two or more firms or individuals for which the participants are both jointly and individually responsible.

**"Key Persons, Specialists, and Individual Consultants,"** as used in this questionnaire, refer to individuals who will have major project responsibility or will provide unusual or unique capabilities for the project under consideration.

## Instructions for Filing (Numbers below correspond to numbers contained in form):

1. Give name and location of the project for which this form is being submitted.
2. Provide appropriate data from the *Commerce Business Daily* (CBD) identifying the particular project for which this form is being filed.
  - 2a. Give the date of the *Commerce Business Daily* in which the project announcement appeared, or indicate "not applicable" (N/A) if the source of the announcement is other than the CBD.
  - 2b. Indicate Agency identification or contract number as provided in the CBD announcement.
3. Show name and address of the individual or firm (or joint venture) which is submitting this form for the project.
  - 3a. List the name, title, and telephone number of that principal who will serve as the point of contact. Such an individual must be empowered to speak for the firm on policy and contractual matters and should be familiar with the programs and procedures of the agency to which this form is directed.
  - 3b. Give the address of the specific office which will have responsibility for performing the announced work.
4. Insert the number of consultant personnel by discipline proposed for subject project on line (A). Insert the number of in-house personnel by discipline proposed for subject project on line (B). While some personnel may be qualified in several disciplines, each person should be counted only once in accord with his or her primary function. Include clerical personnel as "administrative." Write in any additional disciplines -- sociologists, biologists, etc. -- and number of people in each, in blank spaces.
5. Answer only if this form is being submitted by a joint venture of two or more collaborating firms. Show the names and addresses of all individuals or organizations expected to be included as part of the joint venture and describe their particular areas of anticipated responsibility (i.e., technical disciplines, administration, financial, sociological, environmental, etc.).
  - 5a. Indicate, by checking the appropriate box, whether this particular joint venture has worked together on other projects.

Each firm participating in the joint venture should have a Standard Form 254 on file with the contracting office receiving this form. Firms which do not have such forms on file should provide same immediately along with a notation at the top of page 1 of the form regarding their association with this joint venture submittal.

# Architect-Engineer and Related Services Questionnaire for Specific Project

Standard Form 255  
General Services Administration  
Washington, D.C. 20405

6. If respondent is not a joint venture, but intends to use outside (as opposed to in-house or permanently and formally affiliated) consultants or associates, he should provide names and addresses of all such individuals or firms, as well as their particular areas of technical/professional expertise, as it relates to this project. Existence of previous working relationships should be noted. If more than eight outside consultants or associates are anticipated, attach an additional sheet containing requested information.

7. Regardless of whether respondent is a joint venture or an independent firm, provide brief resumes of key personnel expected to participate on this project. Care should be taken to limit resumes to only those personnel and specialists who will have major project responsibilities. Each resume must include: (a) name of each key person and specialist and his or her title, (b) the project assignment or role which that person will be expected to fulfill in connection with this project, (c) the name of the firm or organization, if any, with whom that individual is presently associated, (d) years of relevant experience with present firm and other firms, (e) the highest academic degree achieved and the discipline covered (if more than one highest degree, such as two Ph.D.'s, list both), the year received and the particular technical/professional discipline which that individual will bring to the project, (f) if registered as an architect, engineer, surveyor, etc., show only the field of registration and the year that such registration was first acquired. If registered in several states, do not list states, and (g) a synopsis of experience, training, or other qualities which reflect individual's potential contribution to this project. Include such data as: familiarity with Government or agency procedures, similar type of work performed in the past, management abilities, familiarity with the geographic area, relevant foreign language capabilities, etc. Please limit synopsis of experience to directly relevant information.

8. List up to ten projects which demonstrate the firm's or joint venture's competence to perform work similar to that likely to be required on this project. The more recent such projects, the better. Prime consideration will be given to projects which illustrate respondent's capability for performing work similar to that being sought. Required information must include: (a) name and location of project, (b) brief description of type and extent of services provided for each project (submissions by joint ventures should indicate which member of the joint venture was the prime on that particular project and what role it played), (c) name and address of the owner of that project (if Government agency, indicate responsible office), and name and phone number of individual to contact for reference (preferably the project manager), (d) completion date (actual when available, otherwise estimated), (e) total construction cost of completed project (or where no construction was involved, the approximate cost of your work) and that portion of the cost of the project for which the named firm was/is responsible.

9. List only those projects which the A-E firm or joint venture, or members of the joint venture, are currently performing under direct contract with an agency or department of the Federal Government. Exclude any grant or loan projects being financed by the Federal Government but being performed under contract to other non-Federal Governmental entities. Information provided under each heading is similar to that requested in the preceding Item 8, except for (d) "Percent Complete." Indicate in this item the percentage of A-E work completed upon filing this form.

10. Through narrative discussion, show reason why the firm or joint venture submitting this questionnaire believes it is especially qualified to undertake the project. Information provided should include, but not be limited to, such data as: specialized equipment available for this work, any awards or recognition received by a firm or individuals for similar work, required security clearances, special approaches or concepts developed by the firm relevant to this project, etc. Respondents may say anything they wish in support of their qualifications. When appropriate, respondents may supplement this proposal with graphic material and photographs which best demonstrate design capabilities of the team proposed for this project.

11. Completed forms should be signed by the chief executive officer of the joint venture (thereby attesting to the concurrence and commitment of all members of the joint venture), or by the architect-engineer principal responsible for the conduct of the work in the event it is awarded to the organization submitting this form. Joint ventures selected for subsequent discussions regarding this project must make available a statement of participation signed by a principal of each member of the joint venture. **ALL INFORMATION CONTAINED IN THE FORM SHOULD BE CURRENT AND FACTUAL.**

**STANDARD  
FORM (SF)  
255**

Architect-Engineer  
and Related Services  
Questionnaire for  
Specific Project

1. Project Name/Location for which Firm is Filing:

2a. Commerce Business  
Daily Announcement  
Date, if any:

2b. Agency Identification  
Number, if any:

3. Firm (or Joint-Venture) Name & Address

3a. Name, Title & Telephone Number of Principal to Contact

3b. Address of office to perform work, if different from Item 3

4. Personnel by Discipline: (List each person only once, by primary function.)  
and In-house personnel on line (B).

Enter proposed consultant personnel to be utilized on this project on line (A)

(A) _____ (B) _____ Administrative	(A) _____ (B) _____ Electrical Engineers	(A) _____ (B) _____ Oceanographers	(A) _____ (B) _____ _____
(A) _____ (B) _____ Architects	(A) _____ (B) _____ Estimators	(A) _____ (B) _____ Planners: Urban/Regional	(A) _____ (B) _____ _____
(A) _____ (B) _____ Chemical Engineers	(A) _____ (B) _____ Geologists	(A) _____ (B) _____ Sanitary Engineers	(A) _____ (B) _____ _____
(A) _____ (B) _____ Civil Engineers	(A) _____ (B) _____ Hydrologists	(A) _____ (B) _____ Soils Engineers	(A) _____ (B) _____ _____
(A) _____ (B) _____ Construction Inspectors	(A) _____ (B) _____ Interior Designers	(A) _____ (B) _____ Specification Writers	(A) _____ (B) _____ _____
(A) _____ (B) _____ Draftsmen	(A) _____ (B) _____ Landscape Architects	(A) _____ (B) _____ Structural Engineers	(A) _____ (B) _____ _____
(A) _____ (B) _____ Ecologists	(A) _____ (B) _____ Mechanical Engineers	(A) _____ (B) _____ Surveyors	(A) _____ (B) _____ _____
(A) _____ (B) _____ Economists	(A) _____ (B) _____ Mining Engineers	(A) _____ (B) _____ Transportation Engineers	(A) _____ (B) _____ Total Personnel

5. If submittal is by JOINT-VENTURE list participating firms and outline specific areas of responsibility (including administrative, technical and financial) for each firm: (Attach SF 254 for each if not on file with Procuring Office.)

5a. Has this Joint-Venture previously worked together?  Yes  No

6. If respondent is not a joint-venture, list outside key Consultants/Associates anticipated for this project (Attach SF 254 for Consultants/Associates listed, if not already on file with the Contracting Office).

Name & Address	Specialty	Worked with Prime before (Yes or No)
1)		
2)		
3)		
4)		
5)		
6)		
7)		
8)		

**7. Brief resume of key persons, specialists, and individual consultants anticipated for this project.**

<p><b>a. Name &amp; Title:</b></p>	<p><b>a. Name &amp; Title:</b></p>
<p><b>b. Project Assignment:</b></p>	<p><b>b. Project Assignment:</b></p>
<p><b>c. Name of Firm with which associated:</b></p>	<p><b>c. Name of Firm with which associated:</b></p>
<p><b>d. Years experience: With This Firm..... With Other Firms.....</b></p>	<p><b>d. Years experience: With This Firm..... With Other Firms.....</b></p>
<p><b>e. Education: Degree(s)/Year/Specialization</b></p>	<p><b>e. Education: Degree(s)/Year/Specialization</b></p>
<p><b>f. Active Registration: Year First Registered/Discipline</b></p>	<p><b>f. Active Registration: Year First Registered/Discipline</b></p>
<p><b>g. Other Experience and Qualifications relevant to the proposed project:</b></p>	<p><b>g. Other Experience and Qualifications relevant to the proposed project:</b></p>

**7. Brief resume of key persons, specialists, and individual consultants anticipated for this project.**

<b>a. Name &amp; Title:</b>	<b>a. Name &amp; Title:</b>
<b>b. Project Assignment:</b>	<b>b. Project Assignment:</b>
<b>c. Name of Firm with which associated:</b>	<b>c. Name of Firm with which associated:</b>
<b>d. Years experience: With This Firm..... With Other Firms.....</b>	<b>d. Years experience: With This Firm..... With Other Firms.....</b>
<b>e. Education: Degree(s)/Year/Specialization</b>	<b>e. Education: Degree(s)/Year/Specialization</b>
<b>f. Active Registration: Year First Registered/Discipline</b>	<b>f. Active Registration: Year First Registered/Discipline</b>
<b>g. Other Experience and Qualifications relevant to the proposed project:</b>	<b>g. Other Experience and Qualifications relevant to the proposed project:</b>

7. Brief resume of key persons, specialists, and individual consultants anticipated for this project.

a. Name & Title:	a. Name & Title:
b. Project Assignment:	b. Project Assignment:
c. Name of Firm with which associated:	c. Name of Firm with which associated:
d. Years experience: With This Firm..... With Other Firms.....	d. Years experience: With This Firm..... With Other Firms.....
e. Education: Degree(s)/Year/Specialization	e. Education: Degree(s)/Year/Specialization
f. Active Registration: Year First Registered/Discipline	f. Active Registration: Year First Registered/Discipline
g. Other Experience and Qualifications relevant to the proposed project:	g. Other Experience and Qualifications relevant to the proposed project:

**7. Brief resume of key persons, specialists, and individual consultants anticipated for this project.**

<b>a. Name &amp; Title:</b>	<b>a. Name &amp; Title:</b>
<b>b. Project Assignment:</b>	<b>b. Project Assignment:</b>
<b>c. Name of Firm with which associated:</b>	<b>c. Name of Firm with which associated:</b>
<b>d. Years experience: With This Firm..... With Other Firms.....</b>	<b>d. Years experience: With This Firm..... With Other Firms.....</b>
<b>e. Education: Degree(s)/Year/Specialization</b>	<b>e. Education: Degree(s)/Year/Specialization</b>
<b>f. Active Registration: Year First Registered/Discipline</b>	<b>f. Active Registration: Year First Registered/Discipline</b>
<b>g. Other Experience and Qualifications relevant to the proposed project:</b>	<b>g. Other Experience and Qualifications relevant to the proposed project:</b>



8. Work by firms or joint-venture members which best illustrates current qualifications relevant to this project (list not more than 10 projects).

a. Project Name & Location	b. Nature of Firm's Responsibility	c. Project Owner's Name & Address and Project Manager's Name & Phone Number	d. Completion Date (actual or estimated)	e. Estimated Cost (In Thousands)	
				Entire Project	Work For Which Firm Was/Is Responsible
(1)					
(2)					
(3)					
(4)					
(5)					
(6)					
(7)					
(8)					
(9)					
(10)					

9. All work by firms or joint-venture members currently being performed directly for Federal agencies.

a. Project Name & Location	b. Nature of Firm's Responsibility	c. Agency (Responsible Office) Name and Address and Project Manager's Name & Phone Number	d. Percent Complete	e. Estimated Cost (In Thousands)	
				Entire Project	Work For Which Firm Is Responsible

10. Use this space to provide any additional information or description of resources (including any computer design capabilities) supporting your firm's qualifications for the proposed project.

11. The foregoing is a statement of facts.

Date:

Signature: \_\_\_\_\_ Typed Name and Title: \_\_\_\_\_

## **APPENDIX D: A-E LIABILITY INFORMATION**

1. OICC FE INSTRUCTION 4330.11A of 13 Sep 1988 (Enclosures not included)
2. COMNAVFACENGCOM letter serial 022B/AEDELAY1 of 10 OCT 90
3. PACNAVFACENGCOMINST 4335.2 of 20 Feb 1992



DEPARTMENT OF THE NAVY  
OFFICER IN CHARGE OF CONSTRUCTION  
NAVAL FACILITIES ENGINEERING COMMAND CONTRACTS, FAR EAST  
BOX 61  
FPO SEATTLE 99762-3100

OCT 90

OICCFEINST 4330.11A  
09A/DI/0058E

13 SEP 1988

OICC FAR EAST INSTRUCTION 4330.11A

From: Officer in Charge of Construction, Naval Facilities  
Engineering command Contracts, Far East

Sub j: ARCHITECT-ENGINEER (A-E) DESIGN DEFICIENCIES; PROCEDURES FOR  
DETERMINING A-E LIABILITY AND PROCESSING OF ACTION IN  
CONNECTION THEREWITH

Ref: (a) NAVPAC P-68, Appendix J  
(b) PACNAVFACENGCOMINST 4335.1B

Encl: (1) Sample OICC Findings  
(2) Sample Ltr to be Used for First Notification to A-E  
(3) Sample Format CCAO Memorandum to File

1. Purpose. To issue procedures for handling A/E liability matters within OICC FE and subordinate OICCs.

2. Cancellation. OICCFEINST 4330.11 of 29 Sep 82 and Change 1 of 1 Mar 85.

3. Scope. These procedures apply to the evaluation of construction contract change orders coded DSGN (design) and EROM (error) to determine damages suffered by the U.S. Government due to alleged design deficiencies, including those identified after completion of construction. This policy applies to all A-E contracts awarded and administered by OICC Far East and subordinate OICCs.

4. General

A design deficiency is any error/omission in the design, plans and/or specifications that will require a change order, or new contract, to correct.

b. A-E is obligated to provide at least a design to correct the deficiency at no additional cost to the Government.

c. Government will determine the extent to which the A-E may be reasonably responsible for the increased cost (damages) to correct the "design deficiency".

d. Government will pursue A-E liability and collect for actual "damages" suffered.

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5. Discussion. Each OICC/ROICC will review all change orders coded DSGN and EROM to determine the circumstance and cause for the design deficiency and consider the following questions to determine A-E liability:

a. Is a construction modification, or new contract, needed to correct a design deficiency or an error in the plans and/or specifications?

b. Did the design deficiency result from the A-E's negligent failure to meet the standard of care reasonably associated with the A-E profession, or from a breach of contractual duty? Failure to exercise normal skill and competence is usually negligence. However, you must consider representations of special skills and abilities made by the A-E, and relied upon, in the selection process. If negligence is involved, clearly state in the documentation of your review. In order for the Government to collect for damages, an A-E's performance must be determined to be negligent.

c. Is the deficiency one of omission? Can the work be added at essentially the same cost as if it was included in the original contract requirements?

d. Has the Government suffered actual damages as a result of the design deficiency?

6. Action. Each OICC/ROICC shall process potential A-E liability actions per the policies and general procedures of references (a) and (b). The following outline procedure is provided to assist the OICCs in taking action.

a. For each design deficiency the AROICC/ROICC shall (1) review the circumstances involved, (2) consider the extent to which the A-E may be liable for correction of the deficiency or other actual damages, e.g., extended overhead costs, and (3) assure that it is cost effective to pursue recovery of damages. OICCs may call the Director of Construction, Code 05, OICC FE for assistance in making this determination.

b. If A-E liability is not pursued, prepare a statement detailing the reasons supporting this decision, have it signed by the Contracting Officer and file it in both the design and construction contract files. Do not pursue errors of omission since the added cost would have been in the original bid if the design had included the work, unless there other considerations, such as, extended overhead.

c. To pursue liability action, the AROICC/ROICC shall send a memo in the format of enclosure (1) to the Project Design Engineer (PDE), via Code 05 (or copy to).

13 SEP 1988

d. The PDE shall independently review the alleged deficiency and:

(1) If in agreement with the deficiency and possible liability, the PDE shall notify the A-E in writing. Sample letter is, at enclosure (2). Timing of this notification may vary depending on the particular circumstances of the case. As a general rule, notify the A-E immediately and offer them an opportunity to review the design deficiency and provide a corrective design. Advise the A-E that it may be in their best interest to contact the construction contractor and resolve the issue without Government involvement.

(2) If in agreement with the deficiency but not in agreement with the liability, the PDE shall request from the A-E, in writing, corrective design action at no cost, and shall bring the liability matter to the attention of the OICC/ROICC for a decision on continued pursuit of the liability action.

(3) If not in agreement with the deficiency, shall resolve the issue with the AROICC/ROICC.

e. In those cases where the A-E and the construction contractor resolve the problem, the solution is acceptable to the AROICC/ROICC and the Government incurs no damages, issue a no cost change order to record the change. In addition, the office administering the construction contract shall prepare a memorandum in the format of enclosure (3) for both the design and construction contract files. Send a copy of the memorandum to the Construction Director (05) of OICC Far East who will maintain an accounting of field level resolved design deficiencies.

f. If the A-E cannot, or will not, resolve the alleged liability with the contractor, the OICC/ROICC shall negotiate the required contract modification with the contractor but shall offer the A-E the opportunity to participate in negotiations on the resolution of the deficiency as a technical advisor to the Government. The inability to obtain agreement from the A-E as to financial responsibility, or A-E unwillingness to participate in negotiation, shall not be a cause for delay of remedial construction contract action. If the A-E is not given early notice, clearly document the reason. Make every reasonable effort to minimize the damages for which the A-E may be liable. In any case, inform the A-E when we start an investigation of possible liability. Encourage the A-E to participate and provide pertinent data from his perspective during the investigation. Failure to invite the A-E participation may preclude establishing A-E liability. Maintain copies of all correspondence with the A-E regarding design deficiencies in the design contract file. Enter appropriate correspondence in the construction contract file as well.

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g. If the A-E liability issue cannot be resolved, the OICC/ROICC should forward copies of all correspondence, data, and other information pertinent to the deficiency to OICC FE, Code 05, for use in initiating liability action, and shall document the design and construction contract files. Prepare, the report for Code 05 in the format of attachment (5) of reference (a) and distribute copies as indicated.

h. Code 05 shall review the report submitted by the OICC/ROICC, obtain additional information as necessary and prepare a brief, which concisely sets forth the apparent facts involved, for the A-E Responsibility Board. Code 05 shall also assure that the case is reviewed by the appropriate design code (e.g. code 170 for PWC Yokosuka designs) and a brief is prepared by the Project Design Engineer to present the liability issue from a design perspective.

i. A-E Responsibility Board

(1) A standing A-E Responsibility Board is hereby established for A-E contracts administered by OICC Far East and its field offices. The Board shall consist of at least three of the following members; including one senior member:

Senior Member	Code 90
Member/Alt Senior Member	Code 09A
Member/Alt Senior Member	PWC Yokosuka Code 170
Member/Recorder	Project Manager
Alt Member/Alt Recorder	Project Design Engineer (PDE)
Member	Code 02 Representative
Alt Member	Code 05
Alt Member	OICC/ROICC Representative
Counsel	As available in Yokosuka Naval Base if determined necessary by Senior Member


(2) The Board shall review actions involving potential A-E liability forwarded by Code 05 and provide findings of fact and technical advice to the Contracting-Officer.

(3) Final disposition of an A-E liability action shall be decided by the Contracting Officer at OICC FE. When a bilateral settlement cannot be reached with the A-E, the Contracting Officer at OICC FE shall send the matter to PACNAVFACENGCOM for a final decision. See references (a) and (b) for additional information and specific action requirements.



OICCFEINST 4330.1119;  
13 SEP 1988

j. Code 05 is hereby designated the OICC FE point Of contact for A-E liability with responsibility for monitoring and reporting to PACNAVFACENGCOM on the execution of the program and maintaining a log of A-E liability actions in the format of attachment 7 of reference (a). Code 05 shall submit copies of this log quarterly to PACNAVFACENGCOM Code 09A1 on the 5th of January, April, July and October.



JERRY S. NEIBERT  
Deputy

Distribution:  
OICCFEINST 5216.IN  
Lists I thru III  
List V

copy to:  
PACNAVFACENGCOM



DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING COMMAND

200 STOVALL STREET

ALEXANDRIA VA 22322-2300

IN REPLY REFER TO

4334.2  
022B/AEDELAY1  
10 OCT 90

From: Commander, Naval Facilities Engineering Command

Subj: RESPONSIBILITY OF A-E CONTRACTOR

Ref: (a) FAR 36.608, Liability for Government Costs Resulting  
from Design Errors or Deficiencies  
(b) FAR Clause 52.236-23, Responsibility of the A-E  
Contractor  
(c) FAR 36.609-2, Redesign Responsibility for  
Design Errors or Deficiencies

1. This letter provides guidance on-the recovery of damages caused by A-E contractor's untimely performance of post construction award services (PCAS).

2. The NORTHNAVFACENGCOM Claims Branch requested that guidance be provided on whether reference (a) can be used by the government as a basis for holding an A-E contractor liable for additional costs resulting from an A-E caused delay in reviewing submittals. The guidance was requested because reference (a) is somewhat vague as to whether it covers PCAS such as shop drawings review. A review of references (a) and (b) indicated that reference (b) can be used as a basis for recovery of damages from A-Es due to untimely review of submittals and for seeking recovery for damages caused by the A-E contractor's negligent performance of PCAS. The rationale for the foregoing opinion and for whether negligence falls within the scope of the clause follows:

a. Reference (b) is a required clause for all A-E contracts. See subpart (b) to reference (c). There is no Stated exception for A-E contracts involving PCAS, nor is there an alternate provision for use when PCAS is involved. Consequently, reference (b) is included in all A-E contracts, including those which call for PCAS.

b. Research of existing case law provided no insight regarding whether negligent or untimely performance of PCAS falls within the scope of reference (b). However, the clause itself appears to provide the answer to the question. Subparagraph (b) provides that the contractor shall be and remains liable to the government in accordance with applicable law for all damages to the government caused by the contractor's

Subj: RESPONSIBILITY OF A-E CONTRACTOR


negligent performance of any of the services furnished under the contract. An A-E contractor's failure to review shop drawings within the time period specified in the contract could be considered negligent performance, if the A-E did not exercise such reasonable diligence as one in that profession would ordinarily exercise under similar circumstances. Accordingly, the contract for PCAS should clearly identify delivery dates for all work required. The government contract administrator should monitor delivery dates and take appropriate action if a completion date is not complied with. If the contract does not set a time for review of shop drawings, industry standards would be used in making a negligence determination.

c . Contractor's tardiness, even if it does not raise to the level of negligence constitutes a violation of a material element of the contract, i.e., delivery. Under general contract law principles, the contractor would be liable for any damages which were a foreseeable consequence of its contract breach. The fact that the government will incur delay costs on a related construction contract as a result of the A-E's untimely performance of PCAS is clearly foreseeable (particularly where the contract contains language to that affect). Subparagraph (c) of reference (b) makes clear that the rights and remedies of the government provided for in the contract are in addition to any other rights or remedies provided by law. Therefore, reference (b) would appear to provide an ample basis for seeking recovery for any damages suffered by the government as a result of the A-E's negligent or untimely performance of PCAS.

3. The method for recovering such damages is for the contracting officer to file a claim (or counterclaim if the contractor has filed a claim) against the contractor under the dispute clause of the contract; FAR Clause 52.233-1(d)(1). The contractor would have an opportunity to respond to the claim and the contracting officer would then issue a final decision. If dissatisfied with the contracting officer's final decision, the contractor could file an appeal with either the Armed Services Board of Contract Appeals (ASBCA) or the U.S. Claims Court. WESTNAVFACENGCOM have recovered damages for delay against a number of A-E contractors. In each case, the contracting officer asserted a claim against the A-E contractor citing subpart (c) of reference (b) as the basis for the claim. To date, contractor's have not challenged their position.

4. This guidance should be provided to all appropriate personnel within your contracting and contract administration offices. This has been prepared in coordination with the NAVFACENGCOM Counsel. The point of contact on this matter is Mr. Vincent M. Spaulding, Code 022B, AV 221-7654 or Commercial (202) 325-7654.

Subj: RESPONSIBILITY OF A-E CONTRACTOR

  
**R. R. BOYER**  
By direction.

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DEPARTMENT OF THE NAVY  
PACIFIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
(MAKALAPA, HI)  
PEARL HARBOR HAWAII 96860-7300

PACNAVFACENGCOMINST 4335.2  
023

20 FEB 1992

PACNAVFACENGCOM INSTRUCTION 4335.2

Subj: ARCHITECT-ENGINEER (A-E) LIABILITY PROGRAM

Ref: (a) NAVFAC P-68, Appendix J

Encl: (1) Sample A-E Financial Responsibility, Findings and Recommendation  
(2) A-B Liability Process Flow Chart  
(3) Target Timeframe for Processing a Potential A-B Liability Case  
(4) Quarterly A-E Liability Processing Status Log Format

1. Purpose and Scope. This instruction establishes program and procedural guidance in determining and pursuing Architect-Engineer (A-E) liability for design deficiencies consistent with requirements of reference (a).

2. Applicability. This instruction applies to all Architect-Engineer (A-E)/Engineering Services (ES) contracts awarded and administered under the contracting authority of the Commander, Pacific Division, Naval Facilities Engineering Command (COMPACANAVFACENGCOM). It includes design deficiencies arising from execution of contracts and modifications, and as identified both during and/or after facility construction.

3. Background

Reference (a) establishes general policy and procedures, and defines responsibilities for determining A-E liability for design deficiencies. This instruction implements and supplements reference (a). It establishes uniform procedures throughout PACNAVFACENGCOM in determining and pursuing such liability. This instruction is not intended to be a stand-alone document and must be read in consonance with reference (a).

4. Information

a. When contracting out with A-B firms, PACNAVFACENGCOM expects quality design that meets contract requirements, is delivered on time and is within the established project budget.

b. Whether an A-E liability for a design deficiency results from the A-E's negligent failure to meet the standard of care reasonably associated with the A-E profession or a breach of its contractual duty of skill and care in performing design services, PACNAVFACENGCOM will pursue A-E liability when the Government suffers damage as a result of the design deficiency and it is in the best interest of the Government to pursue such liability.



c. When design deficiency resulting in damage to the Government occurs, the Contracting Officer with the advice of technical personnel and legal counsel will consider the extent to which the A-E may be liable. The convening of an A-E Responsibility Board is not required for each A-E liability case. However, a Board may be convened, as deemed appropriate by the Contracting Officer.

d. The preferred method of settling design deficiency problems involving damages to the Government is for the A-E to resolve the problem directly with the Construction Contractor. If the A-E cannot or will not resolve the possible liability with the Construction Contractor, the required contract modification must be negotiated by the Government with the Construction Contractor.

e. Recovery of design damages will be pursued in all cases where the A-E is clearly liable. The Contracting Officer with the advice of technical personnel and legal counsel will determine whether it is in the best interest of the Government to pursue cases when liability is unclear or the dollar amount is small. A factor to be considered in the determination process will be the cost to litigate the case.

## 5. Definitions

a. CACO - Construction Administrative Contracting Officer, usually the Resident Officer in Charge of Construction.

b. PCM- Pending Contract Modifications, usually initiated by the CACO when design deficiency is identified.

c. DSGN - Reason Code for design deficiency PCM. Designer's error or omission causes additional cost that the Government would have incurred whether or not design deficiency occurred.

d. EROM - Reason Code for Error or-omission PCM. Designer's error or omission causes additional cost that the Government would not have incurred otherwise.

e. COTR - Contracting Officer's Technical Representative serves as the day-to-day contract representative and liaison for the Contracting Officer in dealing with technical and contractual matters with the Contractor (Construction or A-E). This authority is delegated in the appointment letter issued by the Contracting Officer.

## 6. Responsibility

a. PACNAVFACENGCOM Contracts Department (Code 02):

(1) Code 021 - As Design Contracting Officer. Solicits, awards and administers design contracts. Upon advice from technical personnel and legal counsel, determines A-E liability and decides whether to pursue the recovery of damages or not.



(2) Code 023 - A-E Liability Coordinator. Tracks and monitors A-E liability cases from initial identification of EROM design deficiency. Maintains database on the status of A-E liability cases and the recovery of damages for PACNAVFACENGCOM, and reports A-E liability data to COMNAVFACENGCOM.

(3) Code 023 - Claims Division. As Contracting Officer with Final Decision authority (\$500,000), reviews A-E liability cases referred by Code 021, settles with A-E, issues a Final Decision or refers to higher approval authority, as appropriate.

b. PACNAVFACENGCOM Project Management and Construction Division (Code 50) :

(1) Code 501. When requested by Construction COTR, obtains funds for DSGN and EROM changes.

(2) Code 505. As technical advisory coordinator on A-E liability, resolves disagreements between Construction and Design COTR's on PCM reason coding, obtains Field Reports on A-E liability from the CACO, determines technical (design and construction) advisory positions, jointly with Legal Counsel develops and submits Advisory Report to the Design Contracting Officer (see enclosure (1)).

PACNAVFACENGCOM Legal Counsel (Code 09C):

As legal advisor, determines the legal position in A-E liability actions and provides legal support throughout the process. Legal position is documented in A-E Responsibility Advisors Report and Contracting Officer Determination. (See enclosure (1)).

d. PACNAVFACENGCOM Design Division (Code 04):

(1) Design Director. Upon selection of an A-E firm, the Design Director or his designated representative in conjunction with the Design Contracting Officer will arrange a pre-negotiation meeting with the A-E's management staff to discuss project objectives, priorities, performance evaluation criteria, project scope, risk and project related issues. Such meeting of the minds is considered essential to ensure the success of any design project.

(2) Design COTR. The COTR is the primary agent responsible for A-E contract performance. As such, he/she provides technical direction/clarification and monitors A-E contract performance. The COTR does not have the authority to take any action, either directly or indirectly, that could change the pricing/cost or fee, quantity, quality, scope, delivery schedule, labor mix, or other terms and conditions of the contract. The COTR functions within the authority delegated by the Contracting Officer.

(3) Design Advisor for A-E Liability Issues. An individual at the Branch Manager level or higher within the Design Division, PACNAVFACENGCOM. Provides the official, authoritative Design Division position and technical advice to the Contracting Officer via PACNAVFACENGCOM (Code 505). (Different advisors may be assigned for individual projects.)



e. PC0 for Construction:

Field Construction Divisions - Provides construction advisory evaluation support to the CACO.

f. CACO:

Construction COTR. Initiates design deficiency (DSGN or EROM) PCM and coordinates with Design COTR. When A-E is willing to settle directly with the Construction Contractor, reviews and approves the A-E's proposed corrective method in coordination with the Design COTR. Prepares the field report in accordance with Attachment (5), Appendix J of reference (a) and submits to PACNAVFACENGCOM Construction Branch (Code 505) when there is an agreement that A-E liability may be involved and the A-E liability for the design deficiency cannot be resolved at the field level.

7. Procedures

a. Enclosure (2) establishes processing procedures to determine A-E liability for contractual actions where PACNAVFACENGCOM directly awards the design/engineering services contract. While these procedures refer to processing actions for design deficiencies identified during construction, it also applies to design deficiencies found after construction completion. In such a case, the CACO should review and gather pertinent data and notify PACNAVFACENGCOM Construction Branch (Code 505) by letter requesting liability determination.

b. Similar processing procedures should be developed by PACNAVFACENGCOM field contracting officers who award design contracts. If procedures are developed, they will be documented in a local Standard Operating Procedure (SOP) or command instruction and a copy provided to PACNAVFACENGCOM Contracts Support Division (Code 022).

c. Enclosure (3) provides guidance on time frames for timely accomplishment of A-E liability processing actions. It shows the target times to complete significant process steps for a potential liability case of normal complexity. Cases that involve highly complex and/or unusual circumstances should be separately evaluated and time frames adjusted accordingly.

8. Administrative Matters

a. Records:

(1) The Contracting Officer. The A-E Branch (PACNAVFACENGCOM) (Code 021) will maintain a complete master file of all A-E contracts awarded by PACNAVFACENGCOM from the receipt of the Project Assignment Sheet (PAS) for the design to the close-out of the construction contract and lapse of warranty period. Master files of A-E contracts will be held at PACNAVFACENGCOM for a period of one year after close-out of construction contract, then will be forwarded to Central Records Holding Area for a total period of six years and three months after close-out of construction contract or A-E contract,





whichever is later. Each master file will contain all pertinent contracting officer's, technical advisor's and COTR's documentation including but not limited to complete contract scope, drawings, all submittals, memoranda of negotiation with the A-E, record of telephone conversation, correspondence (internal and external), etc.

(2) When a contracting officer's Final Decision on A-E liability is issued, the Contract Claims Division (PACNAVFACENGCOM (Code 023)) will keep the Final Decision File for at least 14 months following either:

(a) The A-E's receipt of the decision, or

(b) The A-E contract close-out, whichever is later, in case the decision is appealed to the ASBCA or U.S. Claims Court. Records will be adequately marked and identified to prevent inadvertent disposal. At the end of the applicable 14 month period, the Final Decision File will be returned to the A-E Master File.

b. Report:

Field contracting activities with A-E contract authority will submit to the PACNAVFACENGCOM A-E Liability Coordinator (Code 023) a log of A-E liability actions using the format in enclosure (41). Reports will be submitted at the end of each quarter. PACNAVFACENGCOM (Code 023) will ensure that a consolidated report is forwarded to COMNAVFACENGCOM (Code 022) within ten calendar days after the end of each quarter.



R. R. BERSANI  
Vice Commander

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PACNAVACENGCOMINST 4335.2  
20 FEB 1992

From : PACNAVFACENGCOM A-R Responsibility Technical and Legal Advisors  
To: Contracting Officer, A-E Contract N62742-YR-C-XXXX  
Subj: ARCHITECT-ENGINEER FINANCIAL RESPONSIBILITY, FINDINGS AND RECOMMENDATION  
Ref: (a) NAVFAC P-68, Appendix J  
Encl: (1) Field Report  
(2) through ( ), each individually identified evidential document

1. Pursuant to reference (a), we have reviewed enclosures (1) through ( ) for possible Architect-Engineer (A-E) financial responsibility. {We were also briefed by representative(s) from Code(s) \_\_\_\_\_ regarding possible A-E financial responsibility.} Based on this review, we recommend that the Contracting Officer make the following findings:

- ( ) There is no A-R financial responsibility.
- ( ) There is no A-E financial responsibility. The Government would have incurred the additional construction cost if included in the initial design and there was no other significant damages to the Government involved.
- ( ) There is A-E financial responsibility. Even though the design deficiency did not result in construction cost above those which would have been incurred if the initial design had been correct, the Government has incurred significant administrative cost in processing the action. The cost is quantifiable and action to recover should be initiated.
- ( ) There is A-E financial responsibility; however, the costs are considered non-recoverable.
- ( ) There is A-E financial responsibility and the costs are considered recoverable. Action to recover should be initiated.
- ( ) There is A-S financial responsibility and the costs are considered recoverable; however, recovery is not in the best interest of the Government.

2. (Support the recommendation provided in paragraph 1 with a detailed statement explaining the reason(s) for the recommendation.)

Enclosure (1)



PACNAVFACENCOMINST 4335.2  
20 FEB 1992

Subj: ARCHITECT-ENGINEER FINANCIAL RESPONSIBILITY, FINDINGS AND RECOMMENDATION

3. When action to recover is recommended, provide cost data (i.e., copies of memorandum of negotiation or business clearance for the construction contract modification resulting from the A-E liability) and, if appropriate, comments regarding the reasonableness of this cost data. If construction contract modification is not yet negotiated, provide estimate of the recoverable damage.

\_\_\_\_\_  
Technical Adviser

\_\_\_\_\_  
Legal Advisor

Contracting Officer

Comments/Action: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

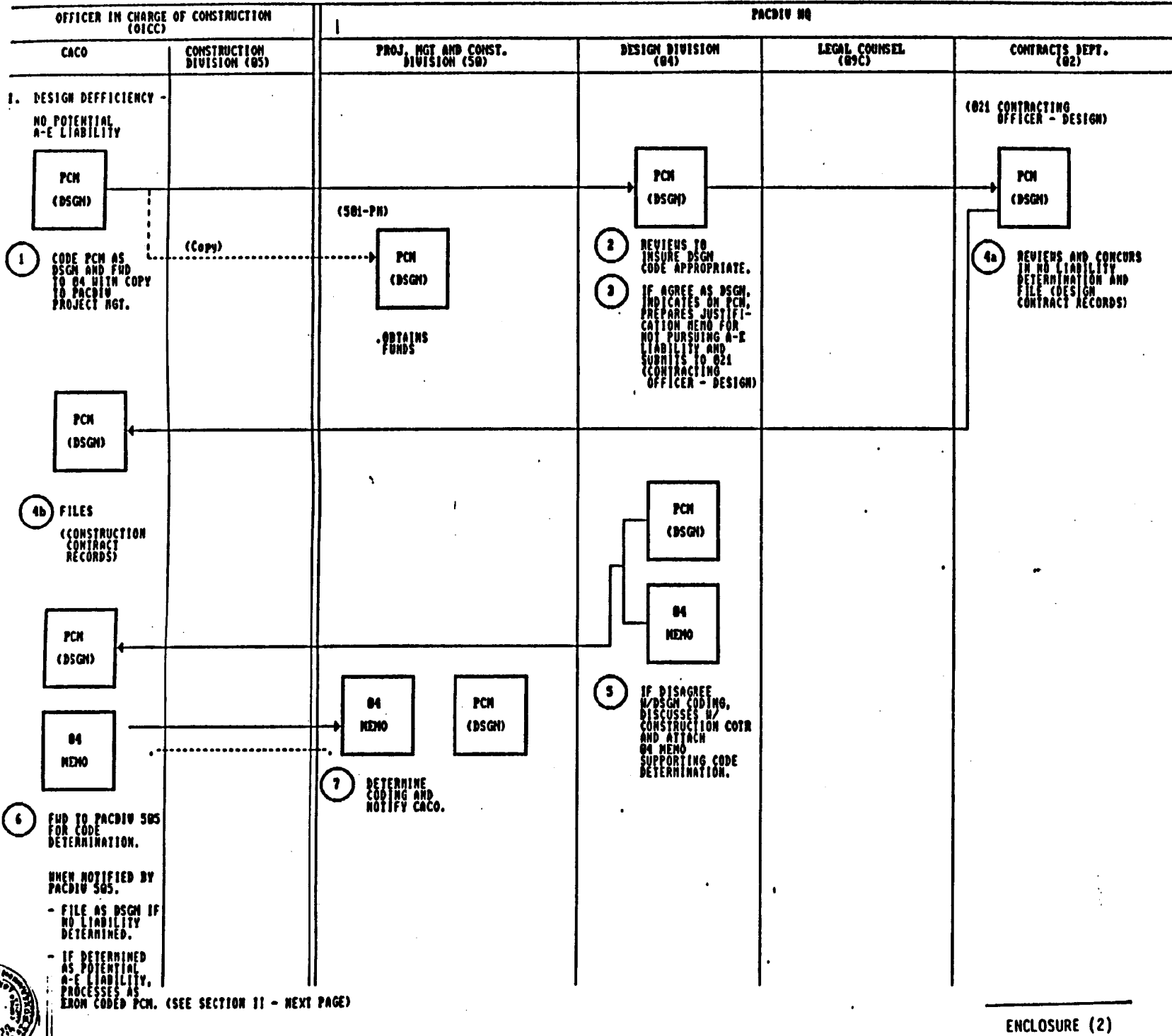
Approved/Denied \_\_\_\_\_  
Date

\_\_\_\_\_  
Contracting Officer

copy to:  
PACNAVFACENGCOM (Codes 09C, 02, 04, 05)  
A-E Liability Coordinator  
Design Contract File (after approval by Contracting Officer)  
Construction Contract File (after approval by Contracting Officer)



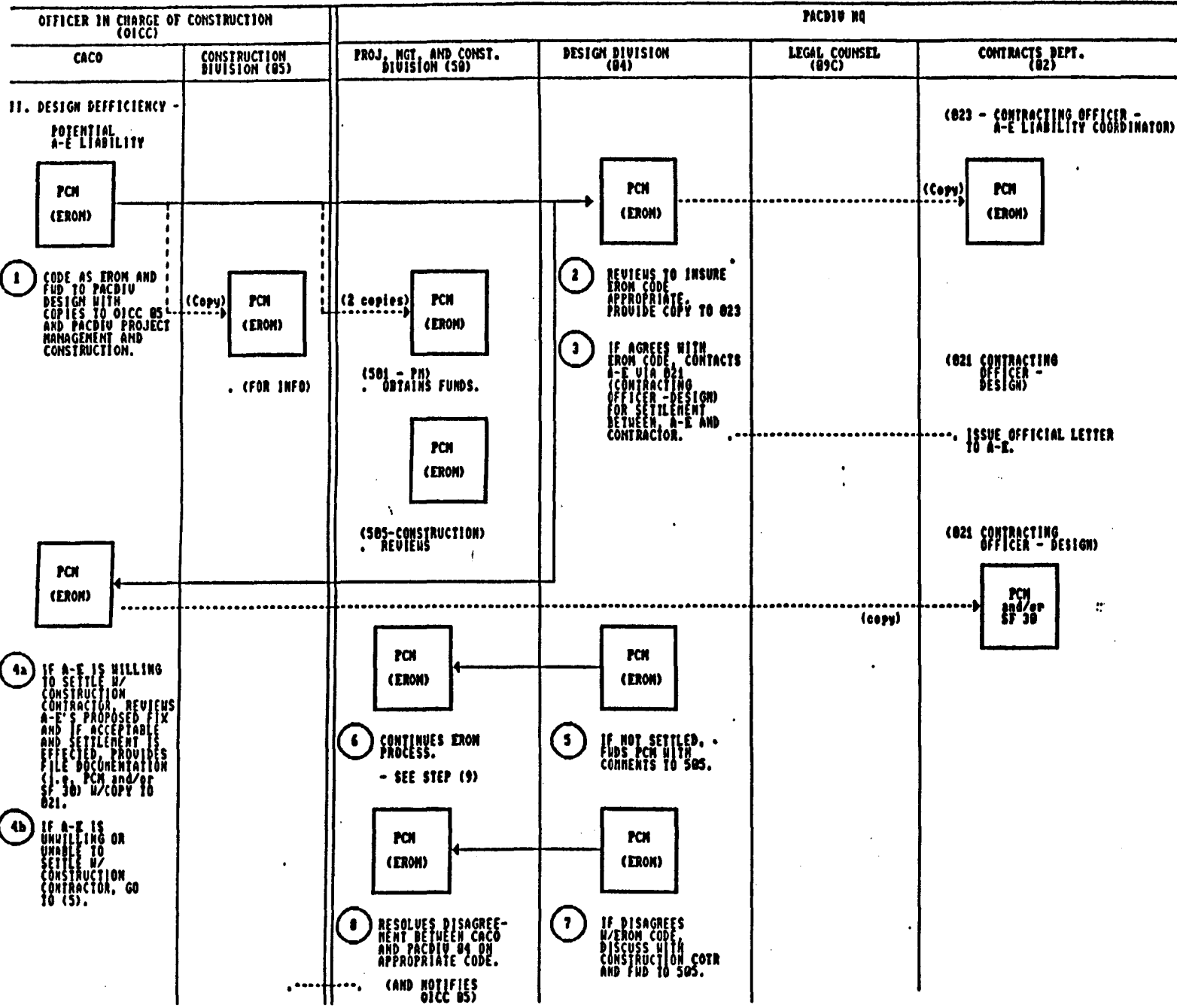
A-E LIABILITY PROCESS



PACNAVFACENCOMINST 4335.2  
20 FEB 1992

A-E LIABILITY PROCESS

FORM NAME: REVISED A-E21



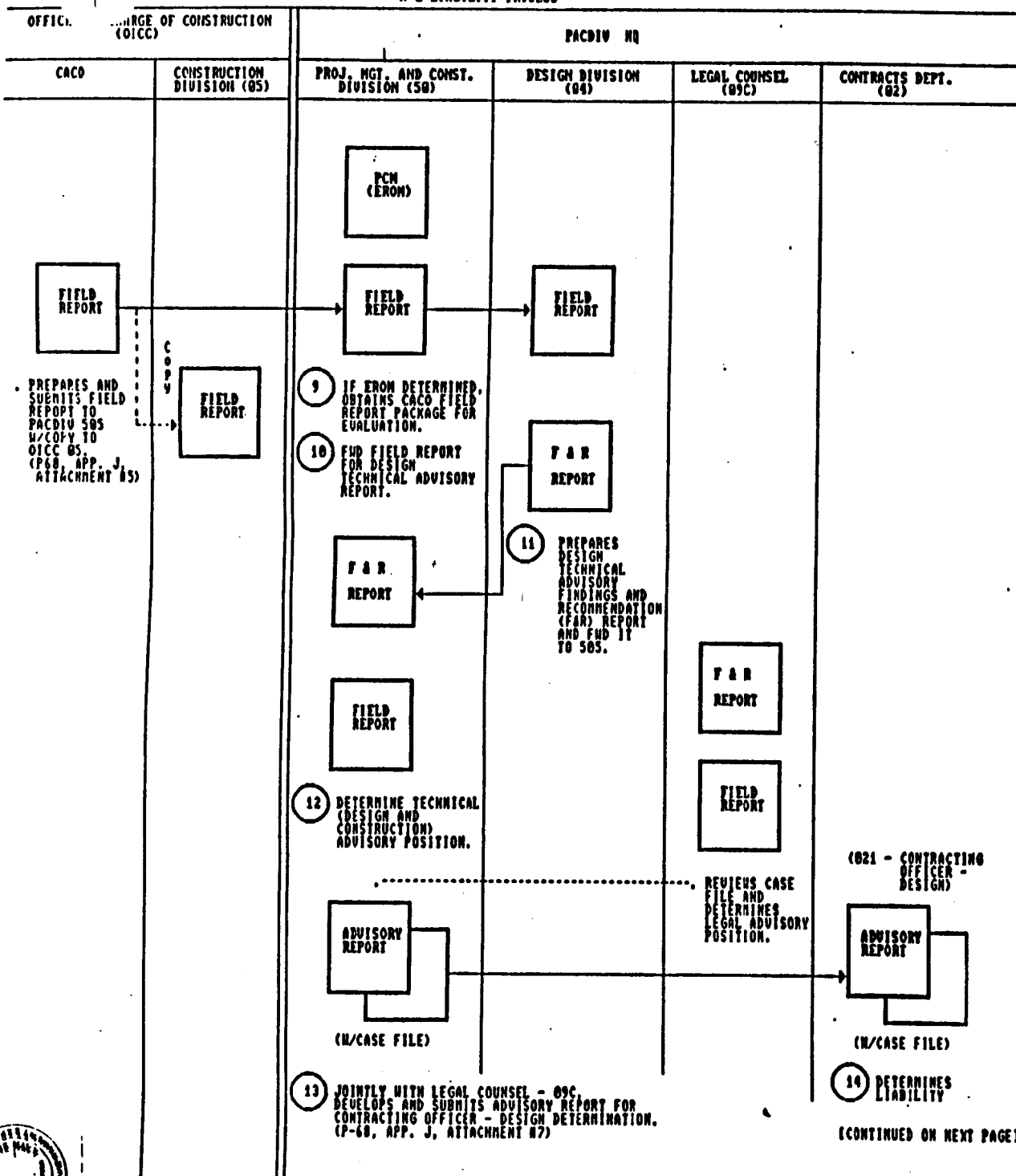
-if EROM determined, continues process - Steps 3 to 6 above.  
 -if not considered EROM, returns to CACO w/505 memo via 021 Contracting Officer - Design.  
 (if 021 non-concurs, continue process, Steps 3 to 6 above.  
 If otherwise 021 concurs, fwd to CACO Contracting Officer A-E Liability Coordinator.)

PACNAVFACENGCOMINST 4335.2.  
 20 FEB 1992



A-E LIABILITY PROCESS

(CHART NAME: REVISED A-E3)



PACNAVFACEGCONINST 4335.2  
2 C F R + 27



A-E LIABILITY PROCESS

OFFICER IN CHARGE OF CONSTRUCTION (OICC)		PACDIV HQ			
CACO	CONSTRUCTION DIVISION (05)	PROJ. MGT. AND CONST. DIVISION (50)	DESIGN DIVISION (04)	LEGAL COUNSEL (09C)	CONTRACTS DEPT. (02)
					<p>(021 - CONTRACTING OFFICER - DESIGN)</p> <p>ADVISORY REPORT</p> <p>(N/CASE FILE)</p> <p>14a IF DETERMINED NOT LIABLE, DOCUMENTS CONTRACT RECORDS W/COPY TO 023, 505, CACO 04, 09C AND 021 (File).</p> <p>14b IF LIABLE, FWD FOR CLAIM PROCESSING.</p> <p>(023 - CONTRACTING OFFICER - CLAIMS)</p> <p>ADVISORY REPORT</p> <p>(N/CASE FILE)</p> <p>15 ADVISES A-E OF CONTRACTING OFFICER DETERMINATION ON LIABILITY AND REQUESTS COMMENTS. IF A-E AGREES, EFFECTS FINAL SETTLEMENT. IF NOT, PROCESSES CLAIM AND IF APPROPRIATE, ISSUES FINAL DECISION OR REFERS TO HIGHER APPROVAL AUTHORITY.</p>

PACNAVFACENGCONINST 4335.2  
20 FEB 1992

ENCLOSURE (2)



TARGET TIMEFRAME FOR PROCESSING  
A POTENTIAL A-E LIABILITY CASE

FLOWCHART  
REFERENCE

ACTION

WEEKS

(1)	CACO INITIATES PCM AS "EROM"	1
(2)	04 REVIEWS PCM	1
(IF 04 AGREES WITH EROM)		
(3) to (6)	04 CONTACTS A-E VIA CONTRACTING OFFICE (021) FOR SETTLEMENT	
	- COTR PREPARES LTR TO A-E AND 021 REVIEWS AND SIGNS	1
	- A-E REVIEWS LTR AND RESPONDS	2
	- 021 EVALUATES A-E RESPONSE AND INFORMS 04. IF A-E SETTLES, 04 FWDS PCM TO CACO. IF NOT SETTLED, 04 FWDS PCM TO 505.	0.5
(IF 04 DISAGREES WITH EROM)		
(7)	04 DISCUSSES WITH Construction COTR AND AND FWDS TO 505	0 (Time in Step 2)
(8)	505 RESOLVES DISAGREEMENT ON EROM CODING BETWEEN CACO AND 04	1
(9) to (10)	CACO PREPARES AND SUBMITS FIELD REPORT AND 505 FWDS IT TO 04	2
(11)	04 REVIEWS FIELD REPORT AND PROVIDES DESIGN TECHNICAL ADVISORY POSITION	2
(12) to (13)	JOINTLY WITH 09C, 505 REVIEWS AND RECOMMENDS GOV'T POSITION TO CONTRACTING OFFICER (021)	4
(14)	021 DETERMINES A-E LIABILITY	0.5
(15)	CONTRACTING OFFICE (023-CLAIMS) CONTACTS A-E TO ADVISE OF LIABILITY AND REQUEST COMMENT	
	- SENDS LTR TO A-E	1
	- A-E REVIEWS LTR AND RESPONDS	3
	- 023 EVALUATES A-E RESPONSE AND PROCESSES CLAIM	<u>3</u>
	<u>TOTAL TIMEFRAME IN WEEKS.....</u>	<u>22</u>

Enclosure





A-E LIABILITY PROCESSING TIMEFRAME

-----T I M E F R A M E-----													
F I E L D R E V I E W					E P D D E T E R M I N A T I O N								
PHASE	O I C C				P A C D I V H Q			O I C C				P A C D I V H Q	
ACTION COMPONENTS	C A C O	0 4	0 4 / 2 0 1	5 0 5	C A C O	0 4	5 0 5 / 0 9 C	0 2 1	0 2 3				
BASIC STEPS	INITIATE PCM	REVIEW PCM	RESOLVE WITH A/E	REVIEW/ DETERMINE LIABILITY	SUBMIT FIELD REPORT	PROVIDE 04 TECHNICAL INPUT	PROVIDE TECHNICAL AND LEGAL ADVISORY	DETERMINE A-E LIABILITY	CONTACT A-E AND PROCESS CLAIM				
FLOWCHART REFERENCE	(1)	(2), (7)	(3) TO (6)	(8)	(9) TO (10)	(11)	(12) TO (13)	(14)	(15)				
TARGET PROCESS TIMEFRAMES (WEEKS)	1	1	3.5	8	2	2	4	0.5	7				
-----22 WEEKS TOTAL-----													



Activity: \_\_\_\_\_ Name: \_\_\_\_\_  
 Autovon: \_\_\_\_\_ Date of Report: \_\_\_\_\_  
 (of preparer)

**A-E LIABILITY PROCESSING STATUS LOG FORMAT**

Case No. Contr Nos.	Title/Location A-E Name	P-No FY Appn	Design Deficiency Description	Source of Design Deficiency	Date of CCAO/ Act wrt Rpt 05	Date of 05 Bd Bfg Date of 04 Bd Bfg	Date of F&R Date of KO D&F	Date DL to A-E Date of Setlmt	Ant of Liability Ant of Settlement	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)

**Column Explanation:**

Col. 1. Case Number: Contract Number: Identify A-E liability cases as indicated below and retain their number throughout their resolution. Cases may be dropped on the final FY report in the year of resolution. Indicate Contract Number of design contract and construction contract.

2. Title/Location: A-E Name: Indicate Title of Project and Location and the Name of the A-E firm in question.

3. P-No/FY/Appn: Indicate Project Number or Identification Number used for project; fiscal year project was authorized for construction and appropriation source short title, i.e., MCON MCONR, OMSN, H&F, FH, etc.

4. Design Deficiency Description: A very brief description of the design deficiency.

5. Source of Design Deficiency: Identify the reason for the A-E liability e.g. poor site investigation, Dimension error on drawings, etc.

6. Date of Construction Contract Administration Officer (CCAO) or Activity written report to 05; indicate date of written report.

7. Date of Technical & Legal advice to KO: Date of 05 Rep Briefing to Board; Date of 04 Rep briefing to Board; Indicate actual date of advice or briefing. When the KO is advised or board is briefed more than once on the same case, report only the date of the first advising or briefing.

8. Date of Tech & Legal Advisers' F&R or Board F&R: Date of KO D&F: Indicate date of Advisor or Board letter giving Findings and Recommendation (F&R) to Contracting Officer (KO) and date of KO Determination and Findings (D&F).

9. Date of DL to A-E: Date of Settlement: Indicate the date of Demand Letter (DL) from the KO to the A-E and date settlement was completed.

10. Amount of Liability: Amount of Settlement: Dollar value should be indicated for all claims. This includes estimated dollar values for newly initiated, dropped field resolved, and ongoing claims. The actual dollar value of liability should be indicated when determined by the KO. The actual amount of settlement payment to the Government should be indicated when received.

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**DESIGNATION OF CASE NUMBERS:**

**Case No. 6 Characters with dash in middle**

**1st Character - Letter, Identifying Organization**

**N - North      W - West  
C - Ches      P - Pac  
L - Lant      T - Trident  
S - South      M - OICC Med**

**2nd & 3rd Characters - FY of case being initiated, i.e. case initiation FY 89.**

**4th - 6th Characters - Numbered in order - starting 001, 002, 003**

**Dash between 3rd & 4th Characters.**

**Example: N89-001**

**11. Remarks: Indicate disposition of claim if not settled; full vs partial settlement; reasons for no action; reasons for missing date in column; settlements between A-E and construction contractors; etc. if applicable indicate the ASBA case number; etc.**

2  
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## **APPENDIX E: CURRENT LIST OF NAVFAC DESIGN MANUALS AND MILITARY HANDBOOKS**

1. Listing of NAVFAC Design Manuals and Military Handbooks

## LISTING OF NAVFAC DESIGN MANUALS AND MILITARY HANDBOOKS

DM-	<u>MIL-HDBK-</u>	
	1001/1	Basic Architectural Requirements & Design Considerations Apr 92
	1001/2	Materials and Building Components 15 Jul 87
1.03		Architectural Acoustics May 85
	1001/5	Roofing and Waterproofing Feb 90
	1002/1	Structural Engineering-General Requirements Nov 87
	1002/2	Structural Engineering-Loads Sep 88
	1002/3	Structural Engineering-Steel Structures Sep 87
2.04		Structural Engineering-Concrete Structures Sep 86
	1002/5	Timber Structures Mar 87
	1002/6	Aluminum, Structure, Composite Structures, Structural Plastics, and Fiber-reinforced Composites 30 Jun 87
2.08		Blast Resistant Structures Dec 86
3.01		Plumbing Systems May 86
	1003/2	Incinerators Sep 89
3.03		Heating, Ventilating, Air Conditioning and Dehumidifying Systems Jan 87
3.04		Refrigeration Systems For Cold Storage Aug 86
3.05		Compressed Air-and Vacuum Systems Mar 83
	1003/6	Central Heating Plants Jan 91
	1003/7	Steam Power Plants - Fossil Fueled Sep 90
	1003/8A	Exterior Distribution of Utilities Steam, High Temperature Hot Water, Chilled Water, Natural Gas and Compressed Air w/Change Aug 91
3.09		Elevators, Escalators, Dumbwaiters, Access Lifts & Pneumatics Tube Systems w/Change Mar 86
3.10		Noise and Vibration Control for Mechanical Equipment (Army) Dec 83
	1003/11	Diesel-Electric Generating Plants Oct 87

	1003/12	Boiler Controls Oct 89
	1003/13A	Solar Heating of Buildings & Domestic Hot Water Jun 85
3.14		Power Plant Acoustics (Army) Dec 83
	1003/17A	Industrial Ventilation Systems Jan 90
	1003/19	Design Procedures for Passive Solar Buildings May 87
	1004/1	Electrical Engineering Preliminary Design Considerations May 88
	1004/2A	Power Distribution Systems w/Change 15 Jan 92
	1004/3	Switchgear and Relaying w/Change Dec 91
	1004/4	Electrical Utilization Systems w/Change Oct 87
	1004/5	400 Hz Medium-Voltage Conversion/Distribution & Low-Voltage Utilization Systems Jun 93
	1004/6	Lightning (and Cathodic) Protection May 88
	1004/7	Wire Communication & Signal Systems Sep 91
4.09		Energy Monitoring & Control Systems Sep 83
	1004/10	Cathodic Protection Jan 90
	1005/2	Hydrology Jun 90
	1005/3	Drainage Systems Sep 90
5.04		Civil Engineering-Pavements Oct 79
	1005/6	Civil Engineering-Trackage Apr 92
	1005/7	Water Supply Systems Nov 88
	1005/8	Domestic Wastewater Control Sep 88
	1005/9	Industrial and Oily Wastewater Control Sep 88
5.10		Civil Engineering-Solid Waste Disposal Sep 86
5.12		Civil Engineering-Fencing, Gates, and Guard Towers Apr 80
	1005/13	Hazardous Waste Storage Facilities Apr 87
5.14		Groundwater Pollution Control Jan 86
	1006/1	Policy and Procedure for Construction Drawings & Specification Preparation w/Change Jul 87

	1006/2A	Policy and Procedure for Guide Specification Preparation w/Change	1 Mar 91
	1006/3B	Policy and Procedure for Engineering & Design Criteria Manual Preparation	Oct 90
	1006/4	Policy and Procedure for Definitive & Standard Design & Standard Specification Preparation	Jul 87
7.01		Soil Mechanics	Sep 86
7.02		Foundations and Earth Structures	Sep 86
7.03		Soil Dynamics, Deep Stabilization & Special Geotechnical Construction	Apr 83
	1008A	Fire Protection for Facilities Engineering, Design and Construction	Mar 88
	1010A	Cost Engineering; Policy and Procedures	Aug 92
	1011/1	Tropical Engineering	Oct 91
	1011/2	Cooling Buildings by Natural Ventilation	Jan 90
	1012/1	Electronic Facilities Engineering	May 89
12.02		High Altitude Electromagnetic Pulse Protection for Ground-Based Facilities	Oct 86
	1013/1	Design Guidelines for Physical Security of Fixed Land-Based Facilities w/Change	Oct 87
13.02		Commercial Intrusion Detection System	Sep 86
	1013/4	Instructions for Design, Fabrication and Construction/Installation of Secure Enclosures	Jan 88
	1013/5	Steel-Ply Wall Hardening Selection and Installation Guide	Jan 88
	1013/7	Security Hardware Installation, Operation and Maintenance	Jun 88
	1013/8	Combination Locks	Dec 89
	1013/10	Design Guides for Security Fencing, Gates, Barriers and Guard Facilities	May 93
14.01		Interior Design Guide	Apr 86
	1015/1	Electroplating Facilities	May 89
	1015/2	Electroplating Technical Synopsis	May 89
	1021/1	Airfield Geometric Design w/Change	31 Aug 92
	1021/2	General Concepts for Airfield Pavement Design	30 Sep 88

21.3		Flexible Pavement Design for Airfields Aug 78
	1021/4	Rigid Pavement Design for Airfields w/Change Aug 92
21.06		Airfield Pavement Design for Frost Conditions & Subsurface Drainage Apr 86
21.09		Skid-Resistant Runway Surfaces Dec 81
22		Petroleum Fuel Facilities Aug 82
	1 0 2 3 / 1	Airfield Lighting Oct 90
	1024/3	Oxyacetylene & Nitrogen & Breathing Oxygen Facilities w/Change 30 Jun 92
	1025/1	Piers and Wharves Aug 90
	1025/2	Dockside Utilities for Ship Service May 88
	1025/4	Seawalls, Bulkheads and Quaywalls Sep 88
	1025/6	General Criteria for Waterfront Construction May 88
26.01		Harbors Dec 84
26.02		Coastal Protection Apr 82
26.03		Coastal Sedimentation and Dredging Sep 86
26.04		Fixed Moorings Apr 86
26.05		Fleet Moorings Jun 85
26.06		Mooring Design Physical and Empirical Data Apr 86
	1027/1	Firefighting School Facilities Mar 91
	1027/3B	Range Facilities and Miscellaneous Training Facilities Other than Buildings Nov 92
	1027/4	Aviation Training Facilities 31 Dec 93
	1028/1A	Aircraft Maintenance Facilities 31 Oct 91
	1028/3	Maintenance Facilities for Ammunition, Explosives and Toxins Dec 87
28.04		General Maintenance Facilities Sep 85
	1028/5	Environmental Control-Design of Clean Rooms May 89
	1028/6	Aircraft Fixed Point Utility Systems Sep 88
	1028/8A	Design of Pest Management Facilities Nov 91



1029/1	Graving Drydocks Jan 89
1029/2	Marine Railways Jun 89
1029/3	Drydocking Facilities Characteristics Sep 88
1032/2	Covered Storage Sep 87
33.01	Medical Facilities-Preliminary Design Considerations Jan 87
33.02	Naval Hospitals-Design & Construction Criteria Jan 87
33.03	Medical Clinics and Dental Clinics Design & Construction Criteria Jan 87
1034	Administrative Facilities w/Change Mar 88
MIL-BUL-34V	Engineering and Design Criteria Jan 94
1035	Family Housing Jun 89
MIL-BUL-35C	Matrix of Guide Specifications for Facilities Construction-Federal and Private Jun 92
MIL-BUL-36	An Overview, U.S. Building Codes and Standards Jun 89
36.01	Unaccompanied Personnel Housing w/Change Jun 82
36.02	Unaccompanied Enlisted Personnel Housing w/Change May 85
36.03	Unaccompanied Officer Quarters w/Change Aug 81
1036/4	Enlisted Dining Facilities Aug 90
1037/2	Child Development Centers Jan 89
1037/3	Outdoor Sports and Recreational Facilities June 89
1037/4	Brigs and Detention Facilities (Interim) Jul 89
37.05	Family Service Centers Apr 85
37.06	Chapels and Religious Educational Facilities Sep 85
1037/7	Officers & Non-Commissioned Officers Dining Facilities; Open Enlisted Dining Facilities Feb 88
38.01	Weight-Handling Equipment Oct 86
39	Hyperbaric Facilities Jul 82
1040	Basic Guide for Chemical Warfare Hardening of New Military Facs Feb 89
1114/2	Maintenance and Operation of Heating Systems Dec 91

1119 Food Service Equipment Aug 91

1130 Inactivation, Caretaker Maintenance, Reactivation, and Closure of Shore Facilities  
Dec 91

1151 Inspection, Maintenance and Operation of Naval Reserve Centers Jul 93

1190 Facility Planning and Design Guide Sep 87

1191 Medical & Dental Treatment Facilities Design and Construction Criteria Oct 91

1195 Radio Frequency Shielded Enclosures Sep 88

1197 Aero-Acoustics Test Programs Mar 88

## APPENDIX F: PROCEDURES FOR ENTRY TO MILITARY INSTALLATIONS

The A-E shall coordinate all requests for gate, vehicle and camera passes with the PDE. The PDE will forward the pass requests to the cognizant Activity personnel for processing and will return the endorsed requests to the A-E. The A-E is requested to submit pass requests at least two (2) weeks before the proposed date of entry to the military installation.

Blank or sample forms for the various military installations in Japan are provided on the following pages.

For entry to NAF Misawa, the A-E shall submit the name, address, date of birth, telephone number, and Yokosuka I.D. Card Number of the personnel for which entry is requested. The A-E shall also indicate the dates and times and the purpose for which entry is requested. The request shall be submitted on A-E firm letterhead paper.

For entry to Navy and Marine Corps installations on Okinawa, the A-E shall consult with the PDE regarding gate/vehicle pass procedures.

## バス申請要領

業者各位

OICCFEとの 契約が成立した後 直ちに添付書類“A”を作成し契約書の写しと一諸に ISOに提出して下さい。

提出書類が証認されると ISOから履歴書 (PERSONAL HISTORY STATEMENT) 用紙が 配布されます。

履歴書は 3日から一週間以内に作成し ISOに提出して下さい。 翌日には仮バスが発行されます。 仮バス期間中に 申請者本人の経歴及び素性調査が行なわれ、2カ月後 本バスが発行されます。

本バス延長の場合は 工期延長が記載された 契約書類及び会社登記簿の写しを ISOに提出して下さい。 約7日後に郵送にて 証認通知があります。

上記手順は 契約遂行上大変重要ですので特に注意を払い書類作成及び提出をして 下さい。

提出書類で質問がありましたら (0468)24-7961 又は (0468) 24-7961 内線5373

CFAY 5700/2(1-87)

APPLICATION TO CONDUCT BUSINESS WITHIN  
FLEET ACTIVITIES, YOKOSUKA

\_\_\_\_\_  
(Date)

From: \_\_\_\_\_ (Name of Company)  
To: Commander Fleet Activities, Yokosuka

Ref: (a) COMFLEACTINST 5700.1 series

- Encl:
- (1) Statement of business to be conducted on the base
  - (2) Personal History Statements, request for
  - (3) Company history
  - (4) One copy of evidence of registry as a company or organization with the Japanese Government
  - (5) One copy of evidence of tax payment as a company or organization with the Japanese Tax Office
  - (6) One copy of license to engage in commercial activities in Japan issued by the Japanese Government
  - (7) One copy of sanitary certificate issued by the Japanese Government (if company is engaged in handling laundry or cleaning of garments or materials)
  - (8) One copy of adequate insurance (if company is engaged in handling laundry or dry cleaning or personal household goods)
  - (9) One copy of each letter stating company or individual is the area representative of a company which is located outside Japan proper (if company or individual is a manufacturers' representative)

1. In accordance with reference (a), application is hereby submitted to conduct business within the confines of Fleet Activities, Yokosuka.

2. The following information is hereby given:

President of Company:

Company Address:

Tel. No.:

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
Company president (Type or print)

/ 添付書類 "A"

Statement of business to be conducted on the base.

Enclosure (1)

2

添付書類“A”

(2 copies)

\_\_\_\_\_

Date

From:

To: Industrial- Security Officer, Commander Fleet Activities,  
Yokosuka

Subj: Personal History Statement: request for

1. It is requested that Personal History Statement(s) be issued to the following personnel of our company who desire(s) to conduct business within U. S. Fleet Activities, Yokosuka. His (Her/Their) KOSEKI-TOHON 戸籍謄本 is attached herewith.

NAME (w/Kanji) DATE OF BIRTH TYPE OF WORK PERMANENT ADDRESS (本籍)

Requested by:

\_\_\_\_\_

Enclosure (2)

3

添付書類 "A"

COMPANY HISTORY (Brief company history since company was first established to present.)

4

Enclosure (3)

添付書類 "A"



## 履歴書（PHS）記入についての注意事項

提出指定日は必ず守って下さい。本履歴書の提出時に印鑑、写真（2部）および戸籍謄本（1部）を必ず持参の事。

受け付け時間は月～金までの午前8時～11時、午後は1時～3時までです。  
受け付け窓口は1番です。

下記注意事項を守って履歴書（PHS）を正確に記入して下さい。  
鉛筆による記入をしないこと。

各記入事項は記憶にある限り正確に書いて下さい。最後の宣誓文にあるように記入に（いっわり）があると取り消し、又は当基地への出入を禁止されます。

1項から5項までと25項は日英両文共記入します。英文タイプライターを使用し翻訳の要領は記入例を参考にして下さい。

年月の記入：昭和63年5月は S又は昭63・5のように書き、英文ではMAY 1988又は 5/88と記入して下さい。

本履歴書の提出の際は、指紋を採取しますから必ず本人が持参、提出して下さい。

英文欄の地名の記入については、番地、町村名、市、県の順にタイプして下さい。  
外国の地名は日本式の読み方では無く、いわゆる英語読みで記入して下さい。

例： 日本語

英文

横浜市金沢区六浦町2-61

2-61, Mitsuuracho, Kanazawa-ku  
Yokohama City

漢国 - Hankow

京城 - Seoul

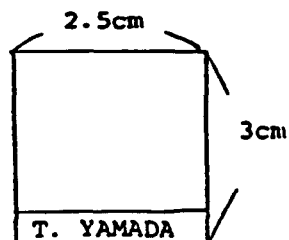
樺太 - Sakhalin

ナホトカ - Nakhodka

ラングーン - Rangoon

ブラジル - Brazil

写真2枚



苗字と名前の頭文字をローマ字で  
写真の下に入れて写真を写して  
ください。

（例： 山田太郎の場合は左記の通り）

記入要領を各項毎に説明します。

1. あなたの名前を入れて下さい。 英文は山田太郎 YAMADA, Taro の様に。
2. 生年月日です。
3. 現住所です。
5. あなたの本籍地です。 ここまで英文も入れて下さい。
6. 男女の区別。
7. 身長をセンチメートルで。
8. 体重をキログラムで。
15. 小学校から順に書いて下さい。
17. 職歴を古い順から失業期間も含めて切れ目なく書いて下さい。
22. 別名を入れて下さい。
25. 出生地から書き始め最後が現住所で終わるように記入して下さい。英文も。
26. あなたの妻又は夫の事です。
  - B. 前の配偶者です。
  - C. 実父の事について書いて下さい。
  - D. 実母の事について書いて下さい。
  - E. あなたの子供を書いて下さい。
  - F. あなたの実の兄弟姉妹を書いて下さい。  
(親族死亡の場合は名前を書き次の本籍地の欄にいつどこで死亡したか書いて下さい。)
27. 項以下は記入しないで下さい。

本履歴書の記入についてご不明のことがあれば説明致します。

横須賀0468-22-5177におかけ下さい。

PERSONAL HISTORY STATEMENT

履 歷 書

PART A - GENERAL INFORMATION

記入欄が不足の時は別紙に項目番号を  
つけて記入して下さい。

IF MORE SPACE IS REQUIRED, USE SEPARATE  
SHEETS OF PAPER IDENTIFYING EACH ITEM  
BY NUMBER.

ATTACH PHOTO HERE

1. 名前 (姓) 石前 (イシマエ)	2. 生年月日 昭和40年	1. NAME (LAST) (FIRST)	2. DATE OF BIRTH
3. 現住所	4. 電話	3. PRESENT ADDRESS	4. PHONE NO.

5. 本籍地	5. PERMANENT ADDRESS
--------	----------------------

6. 性別	7. 身長	8. 体重	9. 視力	10. 色覚	6. SEX	7. HEIGHT	8. WEIGHT	9. EYESIGHT	10. COLOR BLINDNESS
-------	-------	-------	-------	--------	--------	-----------	-----------	-------------	---------------------

11. 健康状態及び身体障害の種類、等級、障害の程度	11. PHYSICAL CONDITIONS, AND KIND AND DEGREE OF HANDICAPS; MARKS OF IDENTIFICATION, IF ANY
----------------------------	--

12. 国籍	13. 外国人登録番号、登録年月、登録場所	12. CITIZENSHIP	REGISTRATION NO., DATE, PLACE REGISTERED
--------	-----------------------	-----------------	--

14. 婚姻に関する事項 (既婚者、再婚者、離婚者、遺棄者、未婚者) <input type="checkbox"/> 既婚 <input type="checkbox"/> 離婚 <input type="checkbox"/> 遺棄 <input type="checkbox"/> 未婚 <input type="checkbox"/> 再婚 <input type="checkbox"/> 再婚 <input type="checkbox"/> 再婚 <input type="checkbox"/> 再婚	(marriage box) <input type="checkbox"/> MARRIED <input type="checkbox"/> SEPARATED <input type="checkbox"/> DIVORCED <input type="checkbox"/> WIDOWER
---	---

15. 学歴	年月	15. EDUCATION	MONTH-YEAR	GRADUATE
--------	----	---------------	------------	----------

学校	年月	SCHOOL	FROM	TO	GRADUATE
学科		COURSE			
所在地		ADDRESS			
学校	年月	SCHOOL	FROM	TO	GRADUATE
学科		COURSE			
所在地		ADDRESS			
学校	年月	SCHOOL	FROM	TO	GRADUATE
学科		COURSE			
所在地		ADDRESS			
学校	年月	SCHOOL	FROM	TO	GRADUATE
学科		COURSE			
所在地		ADDRESS			
学校	年月	SCHOOL	FROM	TO	GRADUATE
学科		COURSE			
所在地		ADDRESS			

16. 免許、証明書、技能に関する事項	16. LICENSES, CERTIFICATES AND JOB-RELATED SKILLS
	ENGLISH TYPING

SAMPLE



PERSONAL HISTORY STATEMENT

履歴書

PART B - PERSONAL SECURITY INFORMATION

記入欄が不足の時は別紙又は裏面の項目番号をつけて記入して下さい

IF MORE SPACE IS REQUIRED, USE SEPARATE SHEETS OF PAPER OR REVERSE SIDE OF FORM IDENTIFYING EACH ITEM BY NUMBER.

RIGHT TRIMD PRINT

名前 (フリガナ)

生年月日

NAME (LAST)

(FIRST)

DATE OF BIRTH

22. 使用したその他の氏名

22. OTHER NAMES EVER USED

23. 他の国籍取得の申請をしたこと、又は取得したことがありましたが、その後の国籍の変更を必要とせず、戸籍登録簿に正確に記入して下さい

23. HAVE YOU EVER APPLIED FOR OR POSSESSED OTHER CITIZENSHIP? ( ) YES ( ) NO IF ANSWER IS YES, STATE CITIZENSHIP(S) CONCERNED AND GIVE FULL PARTICULARS REGARDING RENUNCIATION OR CHANGE, ENTRY OR NAME IN FAMILY'S REGISTER, ETC.

24. 在日実業家、軍人、またはその雇用主、親戚以外で、あなたに十分な経歴について情報を提供できる人3人記入して下さい。その方があなたの年齢や初居先住所を記入して下さい

24. GIVE THREE COMPETENT CHARACTER REFERENCES WHO ARE RESIDENTS OF JAPAN, WHO ARE NOT USFJ PERSONNEL, EMPLOYERS OR RELATIVES, AND WHO ARE SUFFICIENTLY ACQUAINTED WITH YOU TO FURNISH BACKGROUND INFORMATION REGARDING YOUR LIFE. GIVE APPROXIMATE AGE AND THEIR BUSINESS ADDRESS IF KNOWN.

氏名 年齢 年令

OCCUPATION AGE

氏名 住所 職業と住所 氏名 住所 職業と住所 氏名 住所 職業と住所

NAME ADDRESS BUSINESS ADDR. OCCUPATION AGE

SAMPLE

25. 出生地以外の住所(現住所、住所、旅行期間、日本入国の目的等)

25. RESIDENCE FROM BIRTH. (EXCLUDE PRESENT ADDRESS, BUT INCLUDE ALL TEMPORARY ADDRESSES AND PERIODS OF TRAVEL AND DATES OF ENTRIES INTO JAPAN)

DATE FROM TO

26. 親族(死した場合は、死した年、その住所 年月日と記入して下さい) (氏名フリガナと住所)

26. RELATIVES (IF DECEASED, SO STATE, AND GIVE LAST ADDRESS AND DATE)

氏名 生年月日 住所 職業と住所 出生地

A. SPOUSE NAME BIRTH DATE OF BIRTH PERSONAL ADDR. PRESENT ADDR. PLACE OF BIRTH

25. 前心-心口口口				26. CONTINUED FROM PREVIOUS PAGE			
B. 前心配偶名		生年月日		B. FORMER SPOUSE		DATE OF BIRTH	
姓名				NAME			
户籍地				PERMANENT ADD.			
现住所				PRESENT ADD.			
结婚年月日及结婚所在地				PLACE & DATE WHERE MARRIAGE RECORDED			
离婚年月日及离婚所在地				PLACE & DATE WHERE DIVORCE RECORDED			
出生地				PLACE OF BIRTH			
C. 父亲		生年月日		C. FATHER		DATE OF BIRTH	
姓名				NAME			
旧姓(如有)				NCE (IF ANY)			
户籍地				PERMANENT ADD.			
现住所				PRESENT ADD.			
出生地				PLACE OF BIRTH			
D. 母亲		生年月日		D. MOTHER		DATE OF BIRTH	
姓名				NAME			
旧姓				NCE			
户籍地				PERMANENT ADD.			
现住所				PRESENT ADD.			
出生地				PLACE OF BIRTH			
E. 子		性别	生年月日			SEX	DATE OF BIRTH
姓名				NAME			
户籍地				PERMANENT ADD.			
现住所				PRESENT ADD.			
出生地				PLACE OF BIRTH			
姓名				NAME			
户籍地				PERMANENT ADD.			
现住所				PRESENT ADD.			
出生地				PLACE OF BIRTH			
姓名				NAME			
户籍地				PERMANENT ADD.			
现住所				PRESENT ADD.			
出生地				PLACE OF BIRTH			
姓名				NAME			
户籍地				PERMANENT ADD.			
现住所				PRESENT ADD.			
出生地				PLACE OF BIRTH			
F. 兄弟姊妹		性别	生年月日	F BROTHERS AND SISTERS		SEX	DATE OF BIRTH
姓名				NAME			
户籍地				PERMANENT ADD.			
现住所				PRESENT ADD.			
出生地				PLACE OF BIRTH			
姓名				NAME			
户籍地				PERMANENT ADD.			
现住所				PRESENT ADD.			
出生地				PLACE OF BIRTH			
姓名				NAME			
户籍地				PERMANENT ADD.			
现住所				PRESENT ADD.			
出生地				PLACE OF BIRTH			

S A M P L E

26. 続投 (天二一場合は凡レに否々其の住所、年月日を記入して下さい) 26. CONTINUED FROM PREVIOUS PAGE

F. 兄弟姉妹			F. BROTHERS AND SISTERS	
(性別)	生年月日		SEX	DATE OF BIRTH
氏名			NAME	
本籍地			PERMANENT ADD.	
住所			PRES. ADD.	
生地			PLACE OF BIRTH	
氏名			NAME	
本籍地			PERMANENT ADD.	
現住所			PRES. ADD.	
生地			PLACE OF BIRTH	
氏名			NAME	
本籍地			PERMANENT ADD.	
現住所			PRES. ADD.	
生地			PLACE OF BIRTH	

27. あなたは又は家族が現在又は過去に政治団体に加入したことがありますか? (はい)の場合、団体名を記入して下さい。 ( ) はい ( ) いいえ

27. ARE YOU OR ANY MEMBER OF YOUR FAMILY PRESENTLY OR FORMERLY A MEMBER OF ANY POLITICAL ORGANIZATION? IF YES, STATE WHICH ORGANIZATION. ( ) YES ( ) NO

28. あなたが加入している、又はしたことがある団体、クラブ、協会、会、若しくは組合の名と住所を記入して下さい。

28. LIST ALL ORGANIZATIONS, SOCIETIES, CLUBS AND ASSOCIATIONS PAST OR PRESENT, IN WHICH YOU HAVE HELD MEMBERSHIP. GIVE COMPLETE NAMES AND ADDRESSES.

29. 兵役又は自衛隊の経験がなければその事項、又拘留されたことがあればその期間と場所を記入して下さい。

29. PREVIOUS MILITARY OR SELF DEFENSE FORCE SERVICE, IF ANY, AND TIME AND PLACE OF IMPRISONMENT, IF APPLICABLE.

30. 1945年8月15日以降外國から引揚られたことか? ( ) はい ( ) いいえ (はい)の場合、下記記入して下さい。

30. WERE YOU REPATRIATED FROM ANY PLACE OUTSIDE OF JAPAN SINCE AUGUST 15, 1945? ( ) YES ( ) NO IF YES, FILL OUT ENTRY BELOW.

どこから引揚げられたか	引揚年月日	WHERE REPATRIATED	DATE OF REPATRIATION	PORT OF ENTRY INTO JAPAN

SAMPLE

31. 追加事項

31. ADDITIONAL INFORMATION

22. この履歴書中の項目は、この申請書の記述に誤りがある場合は、直ちに所在又は就取中；このおと承知して下さることを私は承諾しております。この記入に誤りがあることが判明された場合、又はこの申請書の記述に誤りがあることが判明された場合、この申請書の提出は即時の私の雇用又は承認の取り消しに結びつきます。この申請書の記述に誤りがあることが判明された場合、私はこの申請書に記述した情報が私の知識と信念の範囲内で真実であることを保証します。

22. I UNDERSTAND THAT FALSIFICATION OF ANY ITEM HEREIN MAY RESULT IN THE IMMEDIATE TERMINATION OF MY EMPLOYMENT OR DISAPPROVAL OF MY APPLICATION. I PLACE MY SIGNATURE IN CERTIFICATION THAT THE INFORMATION CONTAINED HEREIN IS THE TRUTH TO THE BEST OF MY KNOWLEDGE AND BELIEF.

署名	SIGNATURE OF APPLICANT	本人の署名	署名	SIGNATURE OF WITNESS	証人の署名

## APPENDIX G: REVIEW REQUIREMENTS AND REDICHECK CHECKLISTS

1. Review Requirements Checklist
2. Redicheck Checklist



PLANS, SPECIFICATIONS AND COST ESTIMATE  
REVIEW REQUIREMENTS

ARCHITECTURAL

REVIEWERS  
INITIALS AT:  
35%      100%

- |     |   |       |
|-----|---|-------|
| 1.  | All column and wall locations agree with structural drawings.....   | _____ |
| 2.  | Site plans clearly indicate existing conditions and new work.....   | _____ |
| 3.  | Elevations and sections agree with plan views, including roof lines, window and door openings.....  | _____ |
| 4.  | Masonry openings for windows and doors shown.....   | _____ |
| 5.  | Where new, smaller windows are installed in existing masonry openings, space outside windows are filled with mortar..                         | _____ |
| 6.  | All window and door installation details are clearly indicated.....   | _____ |
| 7.  | Expansion joints are used.....  | _____ |
| 8.  | Verify partial floor plans against small scale floor plans.....   | _____ |
| 9.  | Verify reflected ceiling plan against architectural floor plan to ensure no variance with rooms.....  | _____ |
| 10. | Check light fixture layout against electrical, check ceiling deffusers/registers against mechanical, check all soffits and locations of vents | _____ |
| 11. | Partial floor plans agree with small scale floor plans.....   | _____ |
| 12. | Show all trees, shrubs and outline of brush and status, i.e. new8 relocated, or existing remain in place or removals...                       | _____ |
| 13. | Fire resistive wall, floor and ceiling materials shown on interior elevations agree with finish schedule for each room.....                   | _____ |

ARCHITECTURAL (Cont'd)

REVIEWERS  
INITIALS AT:  
35%      100%

- 14. Fire resistive construction clearly indicated at all walls, ceilings, columns, windows and doors..... \_\_\_\_\_
- 15. Diffusers and registers agree with mechanical..... \_\_\_\_\_
- 16. Room names and numbers are shown..... \_\_\_\_\_
- 17. All door schedules and symbols. agree with plans..... \_\_\_\_\_
- 18. All Window schedules and symbols agree with plans..... \_\_\_\_\_
- 19. Window and door intrusion detection device locations shown..... \_\_\_\_\_
- 20. All dimensions critical to cabinet fit have been checked and finished surface dimensions are shown..... \_\_\_\_\_
- 21. All major dimensions have been checked.. \_\_\_\_\_
- 22. Vapor barrier materials are used under slabs on grade..... \_\_\_\_\_
- 23. All dimensions and materials for stairs and ramps are indicated..... \_\_\_\_\_
- 24. Design provides for handicapped persons to utilize facility and rest rooms..... \_\_\_\_\_
- 25. Al.1 roof details are shown including elements to remain in place, or be re-used..... \_\_\_\_\_
- 26. Provisions for future termite control clearly indicated..... \_\_\_\_\_
- 27. Standard title block format is shown.... \_\_\_\_\_
- 28. Drawing, contract and work request numbers, when applicable, are shown,.... \_\_\_\_\_
- 29. Location map, scale(s), abbreviations and legend with symbol explanations are shown..... \_\_\_\_\_

ARCHITECTURAL (Cont'd)

REVIEWERS  
INITIALS AT:  
35%      100%

- 30. All drawing notes and wording are checked for proper spelling and english usage..... 

---
- 31. Locations of all existing-walls, windows, doors, equipment, systems, etc. shown have been field checked and verified correct..... 

---
- 32. Design provides for easy access and maintenance..... 

---
- 33. All elements of design shown have been coordinated with other disciplines participating in this design package.... 

---
- 34. Materials and equipment shown are either readily obtainable, or, long lead items are clearly indicated together with lead time requirements.... 

---
- 35. Construction materials specified are most economical to satisfy project requirements..... 

---
- 36. Materials, heights and other dimensions of all fences and walls are shown, including status, i.e. remain, repair, new..... 

---
- 37. Construction joints and adequate slopes for drainage provided for all paved terraces, patios, decks and sidewalks... 

---
- 38. Dimensions and materials clearly shown for all floor, ceiling and wall scuttles, access panels, grilles, sleeves and other access/penetration provisions..... 

---
- 39. Walls that pass thru/stop at suspended ceilings clearly indicated..... 

---
- 40. Light fixture layout agrees with electrical..... 

---
- 41. Protective bumpers, strips, corner guards provided in all areas subject to damage. 

---



ARCHITECTURAL (Cont' d)

REVIEWERS  
INITIALS AT:  
35%      100%

- 54. Conductive floors shown with necessary detailing. . . . . \_\_\_\_\_
- 55. Rough surfaces provided at entrys, landings, and exterior steps.....
- 56. Janitors service sink considered.. . . . . \_\_\_\_\_
- 57. Lavatories, urinal stalls, water closets typically spaced at, 30", 30", 32" respectively. . . . . \_\_\_\_\_
- 58. Package shelf, toilet paper holders, sanitary napkin dispenser/disposer, coat hook, ash tray provided in water closet stall..... \_\_\_\_\_
- 59. Shelves, mirrors, electric razor outlets, coat hooks, toweling or warm air hand driers, paper towel dispensers provided..... \_\_\_\_\_
- 60. Stairway treads and risers: 7 1/2" maximum and 10" minimum respectively and are non slip..... \_\_\_\_\_
- 61. Handrails are 30-34" above tread nosings, parallel rails are not more than 88' apart and ends are designed to prevent catching coat sleeves..... \_\_\_\_\_
- 62. Minimum 6'-6" clearance between tread nosing and staircase overhang..... \_\_\_\_\_
- 63. Electrical service entry-location shown. \_\_\_\_\_
- 64. Roof fascia construction and expansion joints shown..... \_\_\_\_\_
- 65. Gravel stops construction and expansion joints shown..... \_\_\_\_\_
- 66. Roof gutters materials, sizes, slopes and direction of slipes, screens, expansion joints shown..... \_\_\_\_\_
- 67. Downspouts and leaders, w/strainers at top of leaders including interior leaders. (1 sq. in. of downspout section per 150 sq. ft. of roof area is typical)..... \_\_\_\_\_

ARCHITECTURAL (Cont'd)

REVIEWERS  
INITIALS AT:  
35%            100%

- 68. Rain diverters, scuppers, scuppers thru parapets, overflows shown..... 

---
- 69. Curbs and parapets have flashing, cant strips, crickets, cap flashing shown.... 

---
- 70. Finish roofing and material requirements clearly indicated. . . . . 

---
- 71. Direction of roof slope and degree in inches per foot..... 

---
- 72. Roof-mounted ventilators, vent stacks, exposed ductwork penetration details shown..... 

---
- 73. Attic vents provided with adequate bird/insect screens (1 sq. in. vent space/10 sq. ft. attic space typical)... 

---
- 74. Cooling tower penthouse exhaust located 100' minimum away from fresh air intakes. 

---
- 75. Sound vibration/isolation provided between roof top mounted equipment and sound sensitive work areas below..... 

---
- 76. Guardrails (size, materials, heights) provided on flat roof perimeters, light wells, atriums, courtyards and open shafts..... 

---
- 77. Weatherproofing provided for all exterior electric outlets..... 

---

CIVIL

REVIEWERS  
INITIALS AT:  
35%      100%

1. Water Supply and Distribution:
  - a. Existing system, capacity, and conditions are adequate..... \_\_\_\_\_
  - b. Domestic, industrial, and fire demands are properly calculated..... \_\_\_\_\_
  - c. Location and elevation of connection point(s) verified & shown..... \_\_\_\_\_
  - d. Alternative sources, routes, and materials were considered..... \_\_\_\_\_
  - e. Vertical and horizontal alignment and controls are shown..... \_\_\_\_\_
  - f. Contamination influences have been considered..... \_\_\_\_\_
  - g. Backflow prevention was considered.. \_\_\_\_\_
  - h. Purification/water treatment provisions are adequate..... \_\_\_\_\_
  
2. Sewer and Sewage Treatment Systems:
  - a. Existing system, capacity and load, conditions were evaluated..... \_\_\_\_\_
  - b. Design population, flows, and degree of treatment is proper. . . . . \_\_\_\_\_
  - c. Package units were considered..... \_\_\_\_\_
  - d. gravity vs force main systems were investigated..... \_\_\_\_\_
  - e. Location and elevation of connection point(s) are verified & shown..... \_\_\_\_\_
  - f. ground water problems for subsurface effluent disposal were considered... \_\_\_\_\_
  - g. Vertical and horizontal alignment and controls are shown..... \_\_\_\_\_
  - h. Adequate separation is provided from water lines..... \_\_\_\_\_

CIVIL (Cont'd)

REVIEWERS  
INITIALS AT:  
35%      100%

- 3. Pavements:
  - a. Adequate soil exploration and soil tests were performed..... \_\_\_\_\_
  - b. Type and volume of traffic, controlling wheel loads and configurations were considered..... \_\_\_\_\_
  - c. Adequate drainage is provided..... \_\_\_\_\_
  - d. Cut and fill is balanced and not excessive..... \_\_\_\_\_
  - e. Construction materials and debris disposal site(s) are available nearby. \_\_\_\_\_
  - f. Adequate/required clearances are provided..... \_\_\_\_\_
  - g. Material selection is in compliance with directives..... \_\_\_\_\_
  - h. Ground water table/high water/frost line was considered..... \_\_\_\_\_
  - i. Expansion capability provided if required..... \_\_\_\_\_
  - j. Navigational aids/markings/signs provided where required..... \_\_\_\_\_
  - k. Erosion controls are provided..... \_\_\_\_\_
  - l. Interium traffic routing/controls/haul road maintenance and repairs considered \_\_\_\_\_
  - m. Adequate surveys, cross sections/profile controls are provided..... \_\_\_\_\_
  - n. Proper Joint details clearly shown. \_\_\_\_\_
- 4. Adequate Topographic and Hydrographic survey data is provided..... \_\_\_\_\_
- 5. Existing utility lines, fences, underground utilities and other obstructions to new construction is clearly shown on drawing..... \_\_\_\_\_



CIVIL (Cont'd)

REVIEWERS  
INITIALS AT:  
35%      100%

- 6. Standard title block format is shown.... \_\_\_\_\_
- 7. Drawing, contract and work request numbers, when applicable are shown . . . . \_\_\_\_\_
- 8. Location map, scale(s), abbreviations and legend with symbol explanations are shown. . . . . \_\_\_\_\_
- 9. All drawing notes and wording are checked for proper-spelling and english usage. . . . . \_\_\_\_\_
- 10. Design provides for handicapped persons to use the facility. . . . . \_\_\_\_\_
- 11. Design provides for easy access and maintenance. . . . . \_\_\_\_\_
- 12. All elements of design shown have been coordinated with other disciplines participating in this design package.... \_\_\_\_\_
- 13. Materials and equipment shown are either readily obtainable, or, long lead items are clearly indicated together with lead time requirements.... \_\_\_\_\_
- 14. Construction materials specified are most economical to satisfy project requirements. . . . . \_\_\_\_\_
- 15. Design is in accordance with NAVFAC criteria. . . . . \_\_\_\_\_
- 16. Adequate geotechnical investigations and tests were performed. . . . . \_\_\_\_\_
- 17. Elevation bench mark and soil profiles are shown. . . . . \_\_\_\_\_
- 18. Erosion protection for earth bank was considered. . . . . \_\_\_\_\_
- 19. Run off for drainage system was considered. . . . . \_\_\_\_\_

CIVIL (Cont'd)

REVIEWERS  
INITIALS AT:  
35%      100%

- 20. Dimensions, materials construction joints elevations and slopes of all paving, curbs and sidewalks are shown including status, i.e. remain, repair, new, etc..... 

---
- 21. Materials and heights of all fences and walls are shown including status, i.e. remain, repair, new, etc..... 

---
- 22. All underground structures, foundations, holes and trench locations are shown in schematic form on civil drawings and in detail on electrical, mechanical and architectural drawings..... 

---
- 23. Landscaping/Trees in paved areas provided with adequate openings for watering..... 

---

STRUCTURAL

REVIEWERS  
INITIALS AT:  
35%      100%

1. Foundation conditions are accurately described and foundation type selected is adequate. . . . . \_\_\_\_\_
2. Type of structural system/material selected is economically justified . . . . . \_\_\_\_\_
3. All Design loads including special loads were considered . . . . . \_\_\_\_\_
4. All Special considerations are described. \_\_\_\_\_
5. Built-in weight handling equipment was considered . . . . . \_\_\_\_\_
6. All details are adequately covered (PLEASE THINK ABOUT THIS)..... \_\_\_\_\_
7. All design data and assumptions are provided and shown on drawing..... \_\_\_\_\_
8. Design is in accordance with NAVFAC and U.S. Uniform Building Code criteria. \_\_\_\_\_
9. Roof overhang connection to wall is adequate to prevent uplift..... \_\_\_\_\_
10. Perimeter slab on structural matches architectural . . . . . \_\_\_\_\_
11. All depressed or raised slabs are indicated . . . . . \_\_\_\_\_
12. Slab elevations agree with plans..... \_\_\_\_\_
13. Thickness of slab and cushion fill agree with architectural drawing. . . . . \_\_\_\_\_
14. Foundation materials agree with architectural drawings..... \_\_\_\_\_
15. Roof framing plan column lines and columns agree with foundation column lines and columns..... \_\_\_\_\_
16. All columns and beams are listed in column and beam schedules..... \_\_\_\_\_

STRUCTURAL

REVIEWERS  
INITIALS AT:  
35%      100%

- 17. Length of all columns agree with those shown in column schedule..... 

---
- 18. All sections are properly labeled..... 

---
- 19. All expansion joint locations agree with architectural drawing..... 

---
- 20. All structural dimensions have been checked . . . . . 

---
- 21. Adequate geotechnical investigation and tests were performed..... 

---
- 22. Standard title block format is shown.... 

---
- 23. Drawing, contract and work request numbers, when applicable, are shown..... 

---
- 24. Location map, scale(s), abbreviations and legend with symbol explanations are shown. . . .I..... 

---
- 25. All drawing notes and wording are checked for proper spelling and english usage..... 

---
- 26. Locations of all existing walls, windows, doors, equipment, systems, etc. shown have been field checked and verified correct..... 

---
- 27. Design provides for easy access and maintenance . . . . . 

---
- 28. All elements of design shown have been coordinated with other disciplines participating in this design package... 

---
- 29. Materials and equipment shown are either readily obtainable, or, long lead items are clearly indicated together with lead time requirements..... 

---
- 30. Construction materials specified are most economical to satisfy project requirements.

STRUCTURAL (Cont'd)

REVIEWERS  
INITIALS AT:  
35%      100%

- 31. Adequate structural penetrations/clearances provided for all systems components. \_\_\_\_\_
- 32. Structural frame connections are adequate to resist design load . . . . . \_\_\_\_\_
- 33. Structural materials/coating systems selected/selected to resist corrosion... \_\_\_\_\_
- 34. Foundation pile data shown includes pile tip elevations and special pile driving requirements. . . . . \_\_\_\_\_

MECHANICAL

REVIEWERS  
INITIALS AT:  
35%      100%

- 1. Drawing Format:
  - a. Standard title block format is shown. \_\_\_\_\_
  - b. Drawing, contract and work request numbers, when applicable, are shown. \_\_\_\_\_
  - c. Location map, scale(s), abbreviations and legend with symbol explanations are shown. . . . . \_\_\_\_\_
  - d. All drawing notes and wording are checked for proper spelling and english usage. . . . . \_\_\_\_\_
  
- 2. General:
  - a. Basis for mechanical equipment capacity is proper. . . . . \_\_\_\_\_
  - b. Pressure drop calculations are provided. . . . . \_\_\_\_\_
  - c. All sections agree with architectural/structural drawings... \_\_\_\_\_
  - d. Adequate space exists at intersections of all ducts pipes and electrical conduit to prevent interference..... \_\_\_\_\_
  - e. All structural openings and supports for mechanical equipment are shown on architectural/structural drawings. . . . \_\_\_\_\_
  - f. All penetrations for ducts, fans, pipes, etc. are shown on plans and elevations..... \_\_\_\_\_
  - g. All required notes are indicated.... \_\_\_\_\_
  - h. All interior utility requirements during construction and outage period coordinated with user . . . . . \_\_\_\_\_
  - i. Equipment foundation and piping supports are adequate..... \_\_\_\_\_
  - j. Locations of all existing walls, windows, doors, equipment, systems, etc. shown have been field checked and verified correct. . . . . \_\_\_\_\_

MECHANICAL (Cont'd)

REVIEWERS  
INITIALS AT:  
35%      100%

- k. All elements of design shown have been coordinated with other disciplines participating in this design package. . . . . \_\_\_\_\_
  - l. Materials and equipment shown are either readily obtainable, or, long lead items are clearly indicated together with lead time requirements. \_\_\_\_\_
  - m. Equipment systems components and/or building materials specified are most economical to satisfy project requirements . . . . . \_\_\_\_\_
3. Plumbing:
- a. Number of plumbing fixtures shown is proper. . . . . \_\_\_\_\_
  - b. Size of supply and drain lines are in accordance with fixture unit method (National Plumbing Code). . . . . \_\_\_\_\_
  - c. Type of water pipe, soil pipe, stacks, etc. shown are most economical and properly indicated. . . . . \_\_\_\_\_
  - d. Plumbing fixture locations agree with architectural . . . . . \_\_\_\_\_
  - e. Plumbing fixtures shown in plumbing schedule and are properly specified . . . . . \_\_\_\_\_
  - f. Wall chases are shown on architectural plan to conceal vertical plumbing. . . . . \_\_\_\_\_
4. Piping:
- a. New gas, water, sewer, steam, condensate return lines are connected to existing lines and fixtures . . . . . \_\_\_\_\_
  - b. Existing water and steam supply systems capacity and pressure is adequate after modification. . . . . \_\_\_\_\_





MECHANICAL (Cont'd)

REVIEWERS  
INITIALS AT:  
35%      100%

- i. HVAC system design based on most economical usage, i.e. office, church, theater, etc..... \_\_\_\_\_
- j. Potential condensation problems in mechanical systems and buildings have been considered and adequately designed to avoid this problem..... \_\_\_\_\_
- k. Spacing, locations and provisions for piping anchorages, expansion joints and guides are adequate..... \_\_\_\_\_
- l. All designs are in accordance with: NAVFAC Design Manual..... \_\_\_\_\_
- m. Air quantity and distribution are adequate for proper air exchange.... \_\_\_\_\_
- n. Thermostat locations shown..... \_\_\_\_\_

ELECTRICAL

REVIEWERS  
INITIALS AT:  
35%      100%

- 1. Interior Systems:
  - a. All electrical characteristics of circuits (phase, voltage and number of wires) have been calculated and sizes shown on drawings . . . . . \_\_\_\_\_
  - b. All lighting and power loads, especially for special equipment have been considered and connections indicated . . . . . \_\_\_\_\_
  - c. Type of wiring system and size of conduits indicated . . . . . \_\_\_\_\_
  - d. Selection and setting of protective devices is properly coordinated . . . . . \_\_\_\_\_
  - e. Short circuit duty requirement considered and interrupting capacity ratings are indicated for all new circuit protective devices . . . . . \_\_\_\_\_
  - f. Type and arrangement of telephone, signal, security and fire alarm systems is satisfactory. . . . . \_\_\_\_\_
  - g. Explosion proof equipment shown if required . . . . . \_\_\_\_\_
  - h. New transformer requirements are indicated . . . . . \_\_\_\_\_
  - i. Provisions are made for cut over to new system . . . . . \_\_\_\_\_
  - j. Outages and temporary power during construction have been coordinated with customer . . . . . \_\_\_\_\_
  - k. All panelboards are properly coordinated with electrical riser diagram and circuit numbers are shown . . . . . \_\_\_\_\_
  - l. All panelboards are properly shown on panelboard schedule and sequence of cutover showing when critical . . . . . \_\_\_\_\_

ELECTRICAL (Cont'd)

REVIEWERS  
INITIALS AT:  
35%      100%

- m. Verify all notes to avoid duplication between drawings and specifications. \_\_\_\_\_
  - n. All structural openings and supports for electrical systems are-shown on architectural/structural drawings... \_\_\_\_\_
  - o. Design is in accordance with Rational Electrical Code and NAVFAC DM-4. . . . . \_\_\_\_\_
  - p. Energy conservation features are incorporated. . . . . \_\_\_\_\_
  - q. Telephone, signal and fire alarm systems are adequate and number of spare conductors are indicated.... \_\_\_\_\_
  - r. All electrical plan layouts agree with architectural and mechanical drawings..... \_\_\_\_\_
2. Outside Distribution Systems:
- a. Electrical characteristics of power supply to the station including circuit interrupting requirements and voltage regulations is indicated.... \_\_\_\_\_
  - b. Total connected load and resulting kilowatt demand indicated where group of loads are involved..... \_\_\_\_\_
  - c. Proper demand and diversity factors have been applied..... \_\_\_\_\_
  - d. The point of take-off for selection of primary and/or secondary distribution system is shown..... \_\_\_\_\_
  - e. Type of conductor selected is the most economical (Aluminum conductor was considered) . . . . . \_\_\_\_\_
  - f. Pertinent standards of design are shown and are adequate..... \_\_\_\_\_

ELECTRICAL (Cont'd)

REVIEWERS  
INITIALS AT:  
35%      100%

- g. Telephone, signal and fire alarm system is adequate and number of spare conductors are indicated..... \_\_\_\_\_
- h. Location of nearest fire alarm box shown..... \_\_\_\_\_
- i. All electrical plan layouts agree with architectural and mechanical drawings..... \_\_\_\_\_
- j. Assure that conflicting information/duplication does not exist between drawings and specifications..... \_\_\_\_\_
- k. Short circuit duty requirements are shown for all protective services and switchgear..... \_\_\_\_\_
- l. Selection and setting of protective devices is indicated..... \_\_\_\_\_
- m. Design is in accordance with National Electrical Code..... \_\_\_\_\_
- 3. Cathodic Protection:
  - a. Results of soil resistivity measurements are shown..... \_\_\_\_\_
  - b. Soil properties including seasonal variations were considered..... \_\_\_\_\_
  - c. Structure to soil potential measured where protection is to be provided for existing underground structures or where buried test specimens are used for new installations..... \_\_\_\_\_
  - d. Cathodic interference survey taken in areas where underground utility systems exist..... \_\_\_\_\_
- 4. Electronic Systems:
  - a. System concepts are fully described in basix of design..... \_\_\_\_\_

ELECTRICAL (Cont'd)

REVIEWERS  
INITIALS AT:  
35%      100%

- b. Special coordination requirements are noted in specifications..... \_\_\_\_\_
- c. Government furnished equipment, new and/or relocated is identified..... \_\_\_\_\_
- d. Antenna requirements - foundations, grounding, aircraft obstruction markings, mounting methods are complied with..... \_\_\_\_\_
- e. Radio circuit, frequency bonding and grounding provisions are adequate... \_\_\_\_\_
- f. Radio frequency shielding requirements are indicated..... \_\_\_\_\_
- g. Wired circuits for voice, remote control, etc. are shown..... \_\_\_\_\_
- h. Emergency and/or no-break power supply requirements are adequate.... \_\_\_\_\_
- i. Security requirements are met..... \_\_\_\_\_
- j. Azimuth of coverage and special precautions indicated for radar installations ..... \_\_\_\_\_

5. General:

- a. Standard title block format is shown. \_\_\_\_\_
- b. Drawing, contract, work request and special numbers, when applicable, are shown..... \_\_\_\_\_
- c. Location map, scale(s), abbreviations and legend with symbol explanations are shown..... \_\_\_\_\_
- d. All drawing notes and wording are checked for proper spelling and English usage..... \_\_\_\_\_
- e. Locations of all existing walls, windows, doors, equipment, systems, etc. shown have been field checked and verified correct..... \_\_\_\_\_





FIRE PROTECTION (Cont'd)

REVIEWERS  
INITIALS AT:  
35%      100%

- 15. All pipes piercing fire walls are contained in wall sleeves, with the space between the pipe and sleeve packed with proper materials. . . . . \_\_\_\_\_
- 16. All automatic sprinkler head activation temperatures are clearly indicated. . . . . \_\_\_\_\_
- 17. Design is in accordance with National Fire Code and NAVFAC DM-8 . . . . . \_\_\_\_\_
- 18. Automatic fire door activating equipment coordinated with architectural drawings. \_\_\_\_\_
- 19. Attic or ceiling space separators/draft stops, attic/false ceiling fire detection/sprinklers considered/provided. \_\_\_\_\_





SPECIFICATIONS (Cont'd)

REVIEWERS  
INITIALS AT:  
35%      100%

- 15. Materials indicated are identical with those shown on drawings..... 

---
- 16. Construction contract and specification number shown as indicated in "SCOPE" and specification number appears on each sheet of specification..... 

---
- 17. Door hardware schedule identified..... 

---
- 18. Drawing title numbers and NAVFAC drawing numbers are shown exactly as they appear on the drawings..... 

---
- 19. All specifications referenced in contract specification are available and current..... 

---
- 20. Specification prepared in accordance with guidance established in A-E Guide.. 

---

COST ENGINEERING

REVIEWERS  
INITIALS AT:  
35%      100%

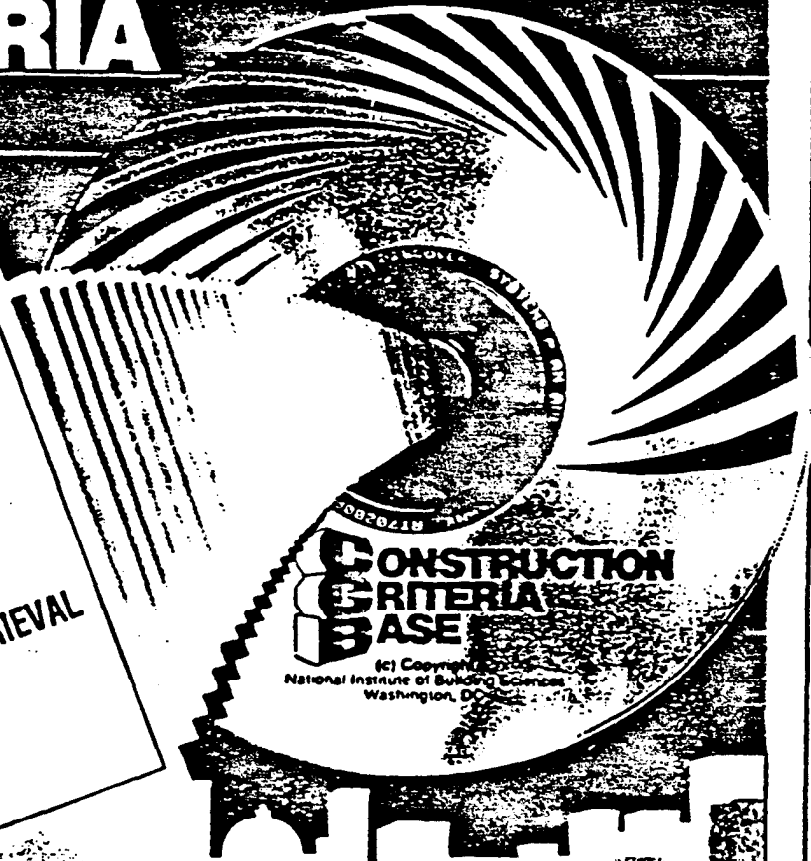
1. Cost escalation/bidding climate was considered and logic provided..... \_\_\_\_\_
2. Cost is consistent with project scope... \_\_\_\_\_
3. Statutory and other cost limitations were considered..... \_\_\_\_\_
4. Built-in equipment, installation of collateral equipment and connection of utilities were considered in building costs..... \_\_\_\_\_
5. Raised floor, high ceiling, shielded room and special foundations were included..... \_\_\_\_\_
6. Demolition and/or relocation of existing facilities were included, including salvage value..... \_\_\_\_\_
7. Security requirements, if any, were considered..... \_\_\_\_\_
8. Project Location was considered..... \_\_\_\_\_
9. Other Factors:
  - a. Work in crawl space..... \_\_\_\_\_
  - b. Work with special care..... \_\_\_\_\_
  - c. Work and maintain quiet..... \_\_\_\_\_
  - d. Interference by occupants..... \_\_\_\_\_
  - e. Work in foul environment..... \_\_\_\_\_
  - f. Special safety requirements..... \_\_\_\_\_
  - g. Work with other contractor/shop forces..... \_\_\_\_\_
  - h. Provide for temporary utilities/HVAC. \_\_\_\_\_
  - i. Overtime to support compressed schedules..... \_\_\_\_\_
10. Shipping problem/Supply problems considered..... \_\_\_\_\_
11. No more than three additive bid items are shown..... \_\_\_\_\_

## APPENDIX H: CONSTRUCTION CRITERIA BASE (CCB) INFORMATION

1. CCB General Information and Subscription Order Form
2. COMNAVFACENGCOM letter DS02D/SAB of OCT 15 1987
3. CCB Bulletin; Volume 5, No. 2; Second Quarter 1994

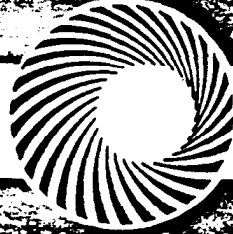


# CONSTRUCTION CRITERIA BASE



- OVER 100,000 PAGES
  - Guide Specifications
  - Design Manuals
  - Fed/Mil Specifications
- SPECSINTACT
- COST ENGINEERING SYSTEM
- QUARTERLY UPDATES
- FULL TEXT SEARCH & RETRIEVAL
- TRANSLATIONS TO YOUR WORD PROCESSOR
- IBM PC COMPATIBLE

**A High-Powered Low-Cost IBM PC Compatible Optical Disc System  
of Construction Criteria Data Bases**



National Institute of  
**BUILDING SCIENCES**

To learn more about the Construction Criteria Base and what it can do for you,  
Call (202) 289-7800, FAX (202) 289-1091,  
or write to:

**National Institute of Building Sciences**  
1201 L Street, N.W., Suite 400, Washington, D.C. 20005

# **CONSTRUCTION CRITERIA BASE (CCB)**

The Construction Criteria Base (CCB) is a fully indexed, mass-produced database, which contains a comprehensive engineering library all on a single 4.7 inch compact disk (CD). The CD is the equivalent of 250,000 pages of paper or 1,650 360K floppy diskettes.

- \* The CD-ROM provides Read-Only-Memory recorded by laser. Therefore, the CCB database cannot be deleted or altered; may be transferred to a hard disk, diskette, tape or other media.
- \* Works with PC AT and true compatible computers.
- \* On-line comprehensive "Technical Library" including Navy, CE, GSA Federal standards; mil specs; NAVFAC Design Manuals; Military Handbook.
- \* CCB CD-ROM updated quarterly - assuring you have the most current reference material available with no modems, connect time charges or lost floppy disks!
- \* Contains Navy Facilities Engineering Command (NAVFAC), Army Corps of Engineers (CE), NASA, and Veteran's Administration (VA) guide specifications accessible by SPECSINTACT specification editing program.
- \* Text Search and Retrieval - Search any database for word, phrase, or document within 5 seconds.
- \* Agency databases are interchangeable providing complete technical coverage of over 1,000 guide specifications.
- \* Access up to 16 agency guideline specifications on the system at one time.
- \* SPECSINTACT - the high productivity guide specification editing software program initially developed by NASA and enhanced by NAVFAC and CE.
- \* Eliminates learning curve required for each agency system.
- \* Updated quarterly - assurance that you are using the most current guide specifications and reference manuals available.

# **SPECSINTACT (SI)**

**SPECSINTACT (SI)** is an acronym for **SPECIFICATIONS-KEPT-INTACT**. It is an automated specification processing system designed for use by engineers, architects, specification writers, project managers and construction managers for facility design construction projects.

**SPECSINTACT** provides time saving automated productivity features to assist the user when editing and processing a project specification.

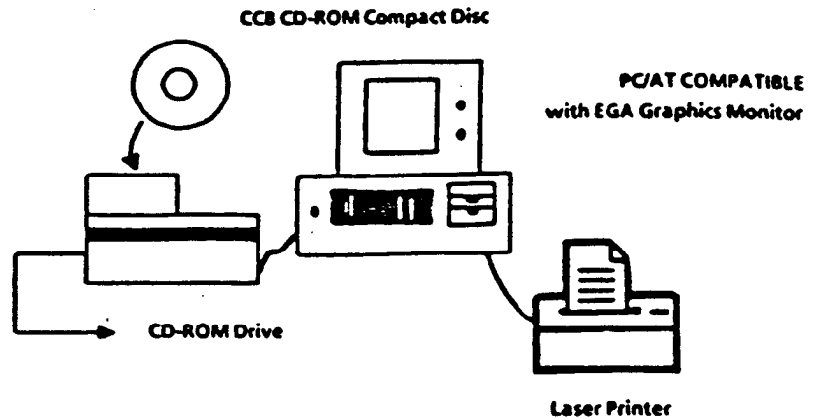
- \* **Re-number subparts within each section, and re-number pages by Section or from beginning to end.**
- \* **Print Draft or Final specification by Section or complete Project.**
- \* **Generate and print a Table of Contents (for a Section, Project and/or Draft or Final print.**
- \* **Print with or without specifier NOTES and Section dates at time of Draft or Final print.**

**SPECSINTACT's** automated report options provide project management reports to enhance quality control of edited master specifications.

- \* **ON-LINE HELP--available throughout SPECSINTACT. By pressing the F1 function key on the keyboard, each screen and most individual fields on the screen have HELP text.**
- \* **SYSTEM CONFIGURATION--automatically verified every time SPECSINTACT is entered. This feature verifies correct software installation and that each Master has the necessary files in order to process correctly.**
- \* **JOB STATUS INFORMATION--a Job Set-up Screen is provided to assist in project management.**
- \* **REFERENCE PROCESSING AND VERIFICATION--automatically edits technical references listed in master specifications to those used in project specification, and generates a REFERENCE LIST.**
- \* **The SUBMITTAL VERIFICATION process verifies that all submittals used in a job are listed in the "01300 SUBMITTAL DESCRIPTION" Section and produces an exception list.**
- \* **The PROJECT SUBMITTAL Report provides a report listing Submittals used in the text by Section as they appear in the job or by Submittal type.**
- \* **The TEST AND OTHER REQUIREMENTS report is a list of test and other requirements specified in the job.**
- \* **The SECTION REFERENCE Report lists Sections referred to in the text of the Job, but not included as part of the Job.**

# **CCB SPECSINTACT SYSTEM HARDWARE**

**Stand Alone System  
Recommended Equipment  
Configuration**



## **COMPUTER**

Personal Computer, true PC-AT or compatible  
640K minimum Random Access Memory (RAM)  
40 MB (megabyte) or greater Hard Disk Drive  
Floppy Disk Drive (1.2 MB)

## **MONITOR**

EGA Color Monitor  
EGA (Extended Graphics Adapter) video board

## **CD-ROM DRIVE**

CD-ROM Drive (Phillips CM-100; Amdek; NEC; Hitachi)  
CD-ROM Controller Board (16 bit slot)

## **PRINTER**

Laser Printer (80 column - 12 char. per inch)

## **OPTIONAL**

Backup Device  
Modem  
Surge Protector



# **SOFTWARE REQUIREMENTS**

## **Disk Operating System**

**PC/DOS, MS/DOS, or ZENITH MS/DOS  
Version 3.1 or higher**

**Microsoft HighSierra Extensions to DOS  
(Provided with CD-ROM Drive)**

## **Construction Criteria Base (CCB)**

**CCB Application Software\***

**SoftScan ASCII/Work Processor Encoder\***

**Textware Search and Retrieval Program\***

## **SPECSINTACT (SI)**

**SPECSINTACT Application Software\***

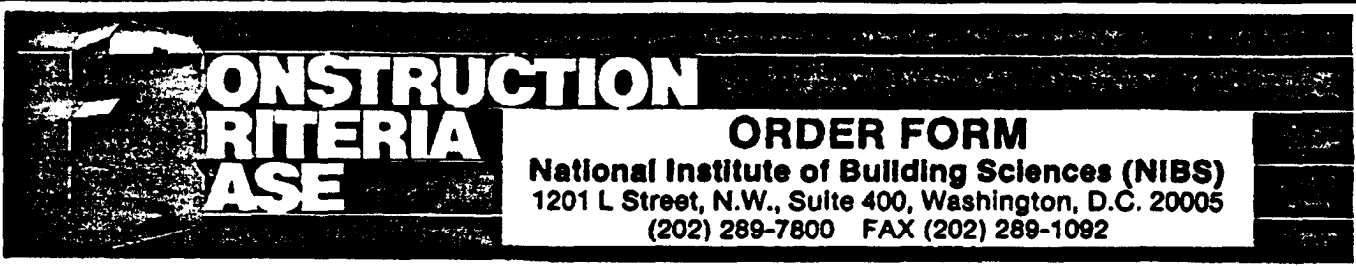
**Word Processor - VolksWriter**

**Macro Software - SUPERKEY**

## **Cost Engineering System (CES)**

**CES Application Software\***

\* Software included on National Institute of Building Sciences  
CCB/SPECSINTACT compact disk.



NAME: \_\_\_\_\_ Invoice # \_\_\_\_\_  
(For NIBS Use)

ORGANIZATION: \_\_\_\_\_

STREET: \_\_\_\_\_

CITY/STATE/ZIP: \_\_\_\_\_

PHONE: \_\_\_\_\_

**Construction Criteria Base Subscription for one year** ..... \$ **970**  
(Four editions, issued quarterly)

**Optional Equipment:**

Single-drive Hitachi CD-ROM Reader \$ 500 .....

Quad-drive CD-ROM Reader \$2,300 .....

Turn-key Workstation (see reverse) \$4,800 .....

**Optional Databases** (if applicable; see reverse side of page)

**Database:** \_\_\_\_\_

**Cost:** (only if added to total payment to NIBS for this subscription) .....

**Total payment to NIBS with this order** ..... \$ \_\_\_\_\_  
(Standard shipment is UPS ground, 5-7 days, at no extra charge. Please add \$60 for air shipment to non-federal overseas addresses.)

All orders must be prepaid with the exception of approved federal government purchase orders.

Payment Enclosed  (Check payable to National Institute of Building Sciences)    Payment by phone/fax   
 VISA    MASTERCARD    American Express

Purchase Order Number (if any): \_\_\_\_\_

Credit Card Number: \_\_\_\_\_    Expiration Date: \_\_\_\_\_

Name on Card: \_\_\_\_\_

Approval Code and Date (for NIBS Use): \_\_\_\_\_

Overnight Express Company/Number (if desired): \_\_\_\_\_

CCB updated discs are released four times per year. Participating organizations submit updated information for disc production in January, April, July, and October. New discs are mailed to subscribers the first week of the following month. Please indicate below when you wish your subscription to begin.

The first of my four installments should be the CCB Edition for:

Feb/Mar/Apr                       May/Jun/Jul                       Aug/Sep/Oct                       Nov/Dec/Jan

Please enter my subscription to CCB for one year. I recognize that software and databases on the CCB discs originate from many different organizations and agencies and are provided to me in "as is" condition without warranty or guarantee of any kind. I agree to observe copyright restrictions to any software or proprietary data provided as part of this subscription.

SIGNED: \_\_\_\_\_    DATE: \_\_\_\_\_

Where did you hear about CCB? \_\_\_\_\_

New Subscription     Renewal    Thank you.

### Basic CCB Subscription Includes:

Four editions of CCB (Updated compact discs are sent to subscribers each calendar quarter.)

#### Each edition of CCB consists of four compact discs containing:

Complete, current approved texts and graphics of guide specifications from over a dozen federal agencies... design, technical and engineering manuals... federal regulations and guidelines related to construction... fed/mil specs and standards... referenced standards from over 100 private organizations... MCACES GOLD and NAVFAC CES cost estimating systems... SPECSINTACT specification processor and other executable programs... many other private and federal databases. New information is added continuously to the Basic Subscription databases at no additional cost to current subscribers.

### Second Quarter 1992 Options Available to CCB Subscribers

**EQUIPMENT:** Single-drive external Hitachi 1700S CD-ROM Reader \$500 (in stock)  
Quad-drive external CD-ROM Reader \$2,300 (allow 4 weeks delivery)  
Turn-key Workstation \$4,600 (allow 4 weeks delivery): Shipped separately, with first installment of CCB subscription loaded and configured. Subsequent updates are sent from NIBS. Workstation includes: 386/25 Tower; 4 MB RAM; Super VGA Monitor; 101 Enhanced Keyboard; 120MB Hard Drive; Quad Internal CD Reader; (1) 3.5" 1.44MB floppy; (1) 5.25" 1.2MB floppy; Microsoft Mouse; MS-DOS 5.0; Microsoft Windows.

*Please note:* If you are purchasing a CD-ROM reader from NIBS to use with a PS2 computer, model 50 or above, please call us before completing your order. A special controller card is required.

**DATABASES:** Access to these proprietary databases (all contained on the CCB compact discs) is purchased separately, and requires a brief installation process with a special security diskette provided by NIBS. 3½ inch diskettes are available on request.

**Ordering AIA MASTERSPEC® on CCB:** Payment for license agreement is made to AIA (same price as standard floppy diskette format). NIBS provides security access diskette at no further charge. Once access is unlocked, all information can be fully viewed, searched, printed, copied to hard disk or floppy diskette, used in WordPerfect 5.0 as is or translated to other word processors. Hard-copy updates are sent directly from AIA. Call AIA Professional Systems Division: 800/424-5080 or 202/626-7584.

**Ordering model codes on CCB:** Indicate order on reverse side of this page or on federal purchase order. Add payment to total check to NIBS for CCB subscription (also may be added to subscription at any time). One-time fees are same as non-member hard-copy prices. All model codes on CCB include the complete texts and graphics, and can be fully searched and viewed in their entirety; they cannot be printed or transferred to disk.

★ ★ ★

**Database:** AIA MASTERSPEC® Cost: Varies depending on libraries ordered.  
**Includes:** All libraries are available. Legal/military paragraph numbered version.

★ ★ ★

**Database:** BOCA® National Code Series 1990 Cost: \$154 (one-time)  
**Includes:** BOCA National Building Code  
BOCA National Mechanical Code  
BOCA National Plumbing Code  
BOCA National Fire Code

★ ★ ★

**Database:** SBCCI® Standard Codes 1988 with 1989-90 Revisions Cost: \$185 (one-time)  
**Includes:** SBCCI Standard Building Code  
SBCCI Standard Plumbing Code  
SBCCI Standard Fire Prevention Code  
SBCCI Standard Mechanical Code  
SBCCI Standard Gas Code

★ ★ ★

**Database:** ICBO 1991 Uniform Codes. Cost: \$225 (one-time)  
**Includes:** Uniform Building Code™  
Uniform Mechanical Code™  
Uniform Plumbing Code™  
Uniform Fire Code™



## DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING COMMAND

200 STOVALL STREET

ALEXANDRIA, VA 22332-2300

DSO2D/SAB  
DS02/TRR  
5760.4.21  
CCB.ltr  
OCT 15 1987

From: Commander, Naval Facilities Engineering Command

Subj: ENGINEERING AND DESIGN CRITERIA AT YOUR PERSONAL COMPUTER  
--ANNOUNCING THE CCB

Encl : (1) Detailed CCB system and subscription information

1. A truly user-friendly, micro-computer based engineering criteria data base which includes a powerful construction "spec-builder," is being implemented. An idea conceived at NAVFAC and implemented by the National Institute of Building Sciences (NIBS)--the Construction Criteria Base is now available to all activities. Enclosure (1) provides a detailed explanation of the system and complete ordering instructions.
2. The Construction Criteria Base--or CCB as it is known--is a fully-indexed, mass-produced package of criteria 'libraries,' on Compact Disc Read-Only-Memory (CD-ROM) which is micro-computer readable and can hold up to 250,000 pages of data (the equivalent of 1,500 floppy diskettes). All data is stored full-text in ASCII code--graphics will be provided on paper until the April 1988 issue. Currently., CCB contains NAVFAC, Corps of Engineers, and National Aeronautics and Space Administration (NASA) guide specifications--about 50,000 pages of information. The CCB is continually being improved and expanded and will ultimately contain all Federal Government construction criteria and perhaps, non-Government voluntary standards and other construction industry data bases.
3. To take advantage of this system you need an IBM personal computer or close compatible with 512k Minimum Random Access Memory; a hard disk of 20 megabytes minimum with 5 megabytes free on C: drive; Enhanced Graphics Adapter (EGA) and EGA monitor; a CD-ROM player and an open expansion board slot for installation of the CD-ROM card. The required software is MS-DOS or PC-DOS version 3.0 or greater; microsoft HighSierra Extensions to DOS; Volkswriter 3 and SuperKey (if SPECSINTACT is used).
4. The current user-friendly system menu includes the following:
  - o Search Data Bases: Full-text search and retrieval allowing searching of data bases for words or groups of words, with the appropriate full text display in a few seconds.
  - o Move Files: View files in the data base, tag them, and print copies of the files to hard disk or floppy diskettes.

Subj : ENGINEERING AND DESIGN CRITERIA AT YOUR PERSONAL COMPUTER  
--ANNOUNCING THE CCB

- o Translate Documents: Translate CD-ROM files singly or in batch mode to any one of the following word processor formats; WordStar, WordPerfect, Samna, MicroSoft Word, MultiMate, VolksWriter, DisplayWriter (DCA/RFT), WordMarc, Wang PC, ASCII.
- o Installation Check: One key check that everything is installed properly. A separate installation program is used to easily perform actual system installation.
- o Word Processor: A one-key tie into any word processor that has been installed on the host computer system.
- o SPECSINTACT: An advanced processing system for preparing project and guide specifications for NASA, CORPS, and NAVFAC. This system is available for test and evaluation. All SPECSINTACT features are now operational on the NASA data base. Most SPECSINTACT features are operational for NAVFAC and CORPS guide specifications. All SPECSINTACT features will be operational for NAVFAC guide specifications in the CCB October quarterly update.

5. For further information on the SPECSINTACT system, contact Ms. Cheryl Mackay, CESO-156 on autovon 360-3361 or commercial (805) 982-3361. X448.


6. The CCB is available to Navy and Army activities from the National Institute of Building Sciences on a yearly subscription basis (which includes a quarterly update) at a cost of \$550.00 per year. NAVFAC made a central purchase of some 80+ CD-ROM readers which have been allocated by priority to those where the appropriate computer equipment is already installed. Each activity is responsible for any further purchases of both the CD-ROM readers and subscriptions. EFD's are encouraged to make enclosure (1) available to all Architect-Engineer firms applying for DOD/Federal work.

7. The CD-ROM readers already at the activities will be installed by contractor personnel. The CCB will be installed at the same time. All questions on installation of the CD-ROM players should be referred to Mr. Dana Smith, FAC DS01, autovon 221-0850 or commercial (202) 325-0850. Training on the use of the system will start in November and will be provided by CESO-156 or contractor personnel. All questions on training should be referred to Mr. Gary Johnson, at CESO-156 on autovon 360-3361 or commercial (805) 982-3361. X442.

8: Engineering Field Divisions (EFD) Design Division, Criteria or Specifications Branch Manager are the primary points of assistance on this program. All PWC's and PWD's are encouraged to work through your local EFD.

Subj : ENGINEERING AND DESIGN CRITERIA AT YOUR PERSONAL COMPUTER  
-ANNOUNCING THE CCB

9. I urge each activity to initiate all processes necessary to purchase additional CD-ROM players and subscriptions to the CCB for all of their personnel who work with construction criteria on a day-to-day basis. Policy and program questions should be directed to Mr. Thomas R. Rutherford, P.E. on autovon 221-0450 or commercial (202) 325-0450.

  
87 THOMAS R. RUTHERFORD, P.E.  
By direction

distribution:  
All EFDs (04)  
All PWCs (Engineering)  
All PWDs (Engineering)  
NCEL  
NEESA  
CESO-156  
OICC Trident

## NIBS CONSTRUCTION CRITERIA BASE (CCB)

The National Institute of Building Sciences asked how to achieve 10 to 1 improvements in access and use of construction criteria documents such as guide specifications, technical manuals, and standards.

CCB, the first part of NIBS answer, is now on sale.

- o All NAVFAC, Corps of Engineers, and NASA guide specs;
- o More construction criteria bases being added in coming months (Like all NAVFAC design manuals);
- o All on 1 CD-ROM laser disc updated quarterly -- no modems connect time charges, or lost floppy disks;
- o WordPerfect, WordStar, Samna, VolksWriter, Multimate, MicroSoft Word, Wang IPC, WordMarc, DisplayWriter, and ASCII output -- Full translation abilities provided;
- o Full-Text Search and Retrieval -- Search any data base for any words in about 5 seconds;
- o Works with IBM XT, AT and compatible computers;
- o \$970 per year

# CONSTRUCTION CRITERIA BASE (CCB)

## NATIONAL INSTITUTE OF BUILDING SCIENCES

**A HIGH-POWERED BUILDING CRITERIA LIBRARY ON A SINGLE LASER DISC:** Today, CCB consists of the full electronic text of the guide specifications of three Federal construction agencies. That is about 25,000 pages of information on one plastic disc. Using CCB software it is possible to this information properly coded for most popular word processors. What's more, besides the traditional formats for these guide specifications, CCB also is testing out a new format that for the first times makes it possible to interchange guide specifications among agencies and also provides a host of advanced specifications processing features. And this is just the start.

CCB will expand substantially in content in coming months. Additional Federal agencies are expected to begin participation in CCB. Soon, CCB coverage of criteria will expand beyond guide specifications to include other documents such as technical manuals.

CCB is more than just a high density disc for disseminating data files. Already, it provides a variety of features such as super fast full text search and retrieval that normally can only be performed on a mainframe computer system. CCB is something that has to be seen to be believed.

CCB utilizes Compact-Disc, Read-Only-Memory (CD-ROM) laser discs read by a special player unit attached to your computer. Each disc can hold the equivalent of 250,000 pages of information or 1,500 floppy diskettes. No complicated telephone hook-ups or hourly usage costs. No keeping track of hundreds of floppy diskettes that can be erased by mistake.

**NAVFAC, CORPS OF ENGINEERS, AND NASA GUIDE SPECIFICATIONS:** Full text is provided. directly accessible to IBM-compatible personal computers. Graphic material from the guide specifications is provided in a binder. In coming months the graphics will be on screen-- complete with zoom capability:

**QUARTERLY UPDATE :** Each quarter, subscribers receive a CD-ROM disc containing the fully updated and indexed CCB data base.

**FULL-TEXT SEARCH AND RETRIEVAL:** Most word processors have a search routine that lets the user search through text for any word or phrase. Searching a data base the size of CCB this way would take days. CCB makes it possible to search any CCB data base for any word. or group of words in about 5 seconds. CCB provides a listing of the titles of documents with matches. Then the user can see the full text on screen, copy retrieved documents to computer disk, or print them.



## REQUIRED COMPUTER SYSTEM

Unlike most large conventional data bases, the NIBS Construction Criteria Base is a desktop system. Though the system is personal computer based, it has been designed to provide the user with many capabilities such as high speed full-text search and retrieval. Once your IBM personal computer or close compatible has been fitted with a CD-ROM player, it will have full and unlimited access to CCB. The installation process is not difficult. Quarterly update discs will contain the entire CCB library.

### HARDWARE

- o An IBM personal computer or close compatible;
- o 512k Minimum Random Access Memory;
- o Hard Disk -- 20 megabytes minimum with 5 megabytes free on C: drive;
- o Enhanced Graphics Adapter (EGA) card and EGA monitor (for best results);
- o A CD-ROM player -- So far the system has only been tested on the Philips CM-100 player, but it is anticipated that most other CD-ROM players will work as well;
- o One open I expansion board slot for installation of the CD-ROM card.

### SOFTWARE

- o MS -DOS or PC-DOS version 3.0 or greater;
- o MicroSoft HighSierra Extensions to DOS;
- o Software supplied with CCB;
- o Volkswriter 3 and SuperKey (if SPECSINTACT is used);

## SYSTEM MENU

CCB involves several distinct software packages and data bases all operating together within a single system (CCB) from a single user-friendly menu. CCB now includes:

- o SEARCH DATA BASES - Full-text search and retrieval allowing searching of data bases for words or groups of words, with the appropriate full text displayed in a few seconds-
- o MOVE FILES - View files in the data base, tag them, and perform copies of the files to hard disk or floppy diskettes.
- o TRANSLATE DOCUMENTS - Translate CD-ROM files singly or in batch mode to any one of these word processor formats: WordStar, WordPerfect, Samna, MicroSoft Word, MultiMate, VolksWriter, DisplayWriter (DCA/RFT), WordMarc, Wang PC, ASCII.
- o INSTALLATION CHECK -- One key check that everything is installed properly. A separate installation program is used to easily perform actual system installation.
- o WORD PROCESSOR - A one-key tie in to any word processor that has been installed on the host computer system.
- o SPECSINTACT -- An advanced processing system for preparing project and guide specifications for NASA, CORPS, and NAVFAC. This system is available for test and evaluation. All SPECSINTACT features are now operational on the NASA data base. Most SPECINTACT features are operational for CORPS and NAVFAC guide specifications at the present time.

## TRANSLATE AND COPY FILES

Using a proprietary software package provided as part of CCB, the user can copy any of the guide specifications from the CD-ROM (where they are stored as ASCII text files) and simultaneously translate these files to formats for WordPerfect, WordStar, MultiMate, DisplayWriter, VolksWriter, WordMarc, and MicroSoft Word. Either single or multiple files may be translated. The user can also convert other non-CCB text files between ASCII and these various word processors.

The translation program is not instantaneous. The average guide specification requires a minute or two for translation. Long documents may require several minutes. If numerous files are to be translated it is recommended that the user tag files for translation during the late afternoon, and then have the translations performed by the machine overnight. For guide specifications that must be edited on word processors to formulate project specifications, the translation produces a document that can be edited much faster than plain ASCII text.

## WORD PROCESSOR TIE-IN

Aside from the special systems that are part of CCB, the CD-ROM is basically a very high capacity Read-Only drive. It can be addressed by standard DOS commands and computer programs such as word processors. The only limitation of the CD-ROM as compared to a hard disk is that the user cannot store any files there. Many users will want to tap into the CCB data base directly using their word processor to view and copy files. This is easily done.

CCB provides a fast one key tie-in to shift between word processing and other CCB functions. This easy tie-in is made during the installation procedure, but may be modified at any later time.

## SPECSINTACT

Over the past few years the National Aeronautics and Space Administration has developed a system called SPECSINTACT designed specifically for preparation of guide specifications, master specifications, and project specifications. NAVFAC has subsequently assisted to provide a number of enhancements to the SPECSINTACT system.

# CCB INSTALLATION

## CCB SOFTWARE INSTALLATION

CCB is actually a fairly complex integrated software system- The novice user is 'shielded' from most of the complexities of the system by the CCB system menu programs and by the CCB Installation program.

To speed installation, NIBS provides a menu-driven installation program to rapidly install all required and optional elements of the system, including the necessary software linkages between the CD-ROM player unit and the host computer. The Installation documentation for this program is provided on just one page. The main concern of the user is to 'insert the installation diskette in the computer, type the word "install", and press the "Enter" key. Almost everything else is taken care of by the installation software.

Software installation requires approximately 25 minutes. Prior computer experience is not necessary. Most of this time involves copying files from either the CD-ROM or from floppy diskettes. Detailed instructions are available for each portion of the system, but most users will not need to consult this material.

Installation options include:

- o Check out host computer for suitability;
- o Automatically install CD-ROM drivers and software;
- o Install CCB programs;
- o Install full-text search software;
- o Install ASCII to word processor translator;
- o Install SPECSINTACT and related programs.

## CD-ROM PLAYER INSTALLATION

Installation of a CD-ROM player is not difficult. The user follows the manufacturer's directions which basically involve removing the computer's outer cover, installing a special card in a free expansion slot in the computer, and connecting cables to tie the CD-ROM to the computer. The process is thoroughly covered in the manufacturer's instructions.

# ORDER FORM

## NIBS CONSTRUCTION CRITERIA BASE

NAME: \_\_\_\_\_

ORGANIZATION: \_\_\_\_\_

STREET: \_\_\_\_\_

CITY / STATE / ZIP: \_\_\_\_\_ TELEPHONE: \_\_\_\_\_

Please Send:	RETAIL	CORPS / NAVFAC
_____ Construction Criteria Base ( 1 year)	\$970.00	\$550.00

\*\* OR \*\*

_____ CCB Subscription with CD-ROM Reader (Shipping included)	1,908.00	\$1,488.00
--	----------	------------

\*\* OR \*\*

_____ CCB Subscription, CD-ROM Reader, VolksWriter 3, SuperKey (Shipping included) (SuperKey and VolksWriter 3 are required to run SPECSINTACT specification processing software.)	\$2,134.00	\$1,714.00
---	------------	------------

Payment Enclosed:

Check (Enclosed): \_\_\_\_\_ VISA (#): \_\_\_\_\_  
 Government Purchase Order: \_\_\_\_\_ MASTERCARD (#): \_\_\_\_\_

I would like to subscribe to the National Institute of Building Sciences Construction Criteria base for one year. I recognize that the software and data base are provided in "as is" condition without warranty or guarantee of any kind. I also agree to observe copyright restrictions for any software or proprietary data provided as part of this subscription.

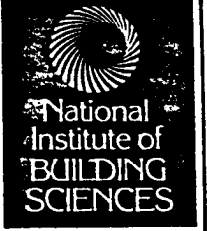
SIGNED: \_\_\_\_\_ DATE: \_\_\_\_\_

RETURN TO: National Institute of Building Sciences  
 ATTN: CCB  
 1015 15th Street, N.W. Suite 700  
 Washington, D.C. 20005  
 TELEPHONE: (202) 347-5710



# BULLETIN

The Newsletter for Users of the Construction Criteria Base



Volume 6 No. 2 Second Quarter 1994



## Show Edition 1994

A/E/C SYSTEMS Booth 1049  
CSI Booth 323

See inside for:

- Introduction to the National Institute of Building Sciences
- CCB's Contents, System Requirements and Participating Organizations
- CD-ROM Resource
- All About SPECSINTACT
- ...and more!



Representatives from federal agencies and private organizations met at NIBS in May for the quarterly meeting of the CCB Coordinating Committee. Also shown are Committee Chairman Thomas R. Rutherford of DOD (top, left) and CADD Council Chairman Deke Smith of NAVFAC. The Committee discussed CCB's growing subscriber base, technical enhancements in progress, and plans for other new CCB activities. (See page 6 for a current listing of the members of the CCB Coordinating Committee.)



## CCB on 7

CCB is now a set of seven compact discs -- nearly three gigabytes -- of information. In addition to the basic four discs of guide specifications, standards, regulations and other documents and executable programs on CCB, the set includes the Med Disc (information related to the design of medical and dental facilities) and the En Disc (pertaining to energy and the environment, including conservation, indoor air quality, asbestos, lead-based paint, and a wide range of other information). All the Optional Databases on CCB have also been moved to a disc of their own: ACI, ASTM, BOCA,

ICBO, SBCCI, AIA MASTERSPEC® and CSRF SPECTEXT®. As always, however, you can easily find the information you need, without knowing the disc where it's physically located. When you select a database, the screen will tell you which disc to

insert. All the contents on CCB are integrated into a single system, accessible from the Main Menu, and there's also an index you can use to search for titles across databases and discs.

## FEDCON '94 Gets High Praise

This year's FEDCON seminar drew over 400 architects, engineers, product manufacturers and other building industry professionals, and judging from the evaluation forms returned, over 95 percent of the attendees considered the information they gained at the meeting to be very valuable. Representatives from major federal construction agencies pre-

sented an update on federal construction -- where the projects are planned, how the process works, who the important contacts are. The National Institute of Building Sciences thanks all our presenters and participants for a successful event and a highly productive day. If you would like to be on our mailing list for future FEDCON events, please give NIBS a call.

# CCB Basics

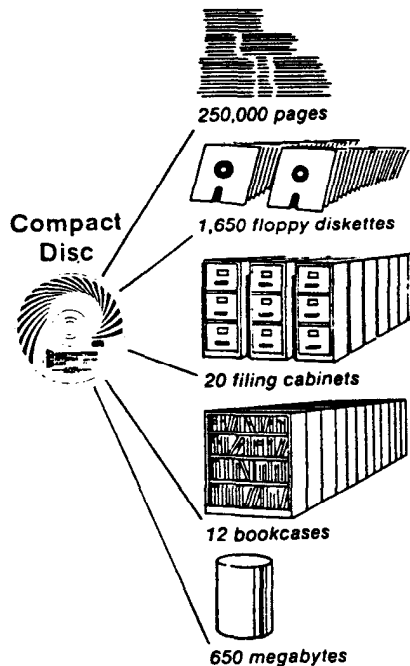
Construction Criteria Base (CCB) is a compact disc system (CD-ROM) containing the complete texts of thousands of documents needed for the design and construction of buildings and civil works. Software is built into the system for automatically accessing and processing information.

The documents on CCB are provided to the National Institute of Building Sciences directly by over 125 participating federal agencies and building industry trade associations, professional societies, standards-writing organizations and code bodies. The information on CCB is approaching one million printed pages -- yet information can be located and retrieved in a matter of seconds.

## SYSTEM REQUIREMENTS

CCB is available in two versions: CCB for DOS and CCB for Windows. Both are included on every CCB; the user may install either or both, and both can be networked. There is no additional cost.

- **Personal Computer:** (IBM compatible) 286 minimum, 386 and above recommended.
- **RAM:** 640K minimum, with at least 540K free. Extended or expanded memory will increase speed and number of documents that can be viewed together.
- **Hard Disk:** 20 megabytes (MB) minimum, 40 MB or larger recommended. Actual space required will depend on programs you have already installed, CCB programs you want to install, etc. See list below for the approximate space required by each major program on CCB.
- **Graphics Capability:** at least EGA, 640 x 350 resolution
- **CD-ROM Reader:** Available from any computer supplier. Any model that can accept ISO9660 (the international standard) can be used.
- **MS-DOS or PC-DOS,** version 3.1 or higher.
- **CD-ROM Reader must be accessible** through DOS drive letters (e.g., E:, F:, L:, etc.). For stand-alone systems, this probably means you will need **Microsoft CD-ROM Extension to DOS**, version 2.0 or over (software usually supplied along with the CD-ROM reader). Network systems may use other software.
- **For CCB for Windows users only:** Windows™ 3.1, 386 Enhanced Mode, or higher.



## Hard Disk Space Requirements (in Megabytes)

CCB	3	CES	5.5+
Value Engineering	10	IWRAPS	2.5
SPECSINTACT	5	Each division	3
PFCG	1	PC-ARMS	1.2
MCACES	12.5	TRACES	6
Title Page Gen.	.5	NIST Life Cycle	3

## Networks

**CCB for DOS** can be used on a networked CD-ROM reader. The CCB program must be installed on every local machine, but only one set of CD-ROMs is necessary. The CD-ROM reader must be mapped to a DOS drive letter (e.g., E:, F:, L:, etc.). Installing CCB on a server is generally not recommended. There is no additional charge for multiple users.

**CCB for Windows** can be used on any local area network that is (a) able to network compact discs and (b) able to network Windows. CCB for Windows acts as a client on the network; users are not required to log on to a specific drive. The program can be installed on any number of machines and requires less than 2MB space (it is installed on the machine(s) where it is used, not on the LAN server). The CCB compact discs themselves can be installed on any reader in the LAN. There is no additional charge for multiple users.

## Products

CCB includes information from product manufacturers. (A graphics adapter (e.g., Super VGA) that can handle 256 colors, 640 x 480 resolution, is required to view full-color images, but is not necessary to access all the text, charts, tables and black-and-white images.)

## OPTIONAL DATABASES Second Quarter 1994

The information listed on the next page is all included in the basic subscription cost of \$970 per year (businesses located in Washington, D.C. must add 6 percent sales tax to their total order). In addition, the following proprietary databases are optional on CCB and can be purchased separately. They require a brief installation process with a special security access diskette (5.25" diskettes standard; please specify when ordering if you need 3.5").

**Private Guide Specifications:** All sales are handled directly by the organizations (AIA and CDS). Payment is made directly to them. Then NIBS provides users with a security access diskette at no further charge to "unlock" the databases on CCB. All information can be fully viewed, searched, printed, copied to hard disk or floppy diskette, used in WordPerfect 5.1 as is, or translated to other word processors.

**AIA MASTERSPEC®** All libraries available, in paragraph-numbered version. For information, call AIA Professional Systems Division 1-800-424-5080.

**Construction Sciences Research Foundation (CSRF) SPECTEXT®** Four packages available. For information, call Construction Data Services (CDS) 1-800-235-3515.

**Model Codes and Standards Payment** for these can be added to your CCB subscription. The one-time fee is the same as the non-member hard-copy price, and gives you access to the database on CCB for as long as you subscribe. All model codes on CCB include the complete texts and graphics and can be fully searched and viewed in their entirety (they cannot be printed or transferred to hard drive).

**ASTM Standards in Building Codes 1992:** \$395

**ACI Building Code Requirements for Reinforced Concrete and Specifications for Structural Concrete for Buildings 1994:** \$120

**BOCA® National Code Series 1990:** \$154  
**SBCCI® Standard Codes 1988 with 1989-90 revisions:** \$185

**ICBO® 1991 Uniform Codes:** \$240

## FOR INFORMATION:

CCB for DOS 202/289-7800  
CCB for Windows 800/841-5755

## CCB Contents: 2nd Quarter 1994

### Disc A

#### Guide Specifications

- Matrix of Agency Guide Specifications (Mil-Bul-35)
- Army Corps of Engineers (COE) Civil Works Guide Specifications
- Army COE Military Construction Guide Specifications (including Metric)
- Army COE Military Construction Abridged Guide Specifications (including Metric)
- Bureau of Reclamation (BREC) Standard Specifications
- Department of Energy (DOE) General Design Criteria Manual
- Department of Housing and Urban Development (HUD) Guide Specifications
- Department of Veterans Affairs (VA) Master Specifications
- Federal Aviation Administration (FAA) Construction Specifications
- Federal Highway Administration (FHWA) Standard Specifications (1985 and 1992)
- General Services Administration (GSA) Master Specifications (Supplement: Divisions 00, 01, 15 & 16) (English and Metric)
- GSA Section Cover Sheets
- National Aeronautics and Space Administration (NASA) Detailed Specifications
- NASA KSC Local Master Specifications
- NASA ARC Local Master Specifications
- National Institute of Health (NIH) Specifications
- Naval Facilities Engineering Command (NAVFAC) Basic Guide Specifications (English and Metric)
- NAVFAC Regional Guide Specifications (CHESDIV, LANTDIV, WESTDIV, PACDIV, SOUTHIV, YOKOSUKA)
- NAVFAC Short Form Specifications
- NAVFAC Newport Design/Build Specifications
- NAVFAC Guide Performance Work Statements
- NAVFAC Solicitation Title Page Generator
- NAVFAC Cost Engineering System (CES)
- SPECSINTACT

#### Regulations

- Standard Forms 254/255
- Architectural and Transportation Barriers Compliance Board (ATBCB) Uniform Federal Accessibility Standards
- Americans with Disabilities Act (ADA) of 1990
- ADA Accessibility Guidelines for Buildings & Facilities
- ADA Regulations (Part 36)
- Fair Housing Accessibility Guidelines
- EPA Hazardous Waste regulations and standards (Title 40, Parts 260, 261, 263, 264, 266)
- EPA Underground Storage Tank regulations (Title 40, Part 280)
- Occupational Safety and Health Administration (OSHA) Safety and Health Standards (1910)
- OSHA Safety and Health regulations for: Construction (1926); Longshoring (1918); Marine Terminals (1917); Shipyard Employment (1915)
- U.S. Postal Service Regulations & Guidelines

### Disc B

- Referenced Fed/Mil Specifications and Standards
- Referenced Private Industry Standards from over 115 organizations.
- Single Master Reference (NAVFAC/COEWASA)
- NAVFAC CADD Symbols and Details
- NAVFAC Standard Drawings and Titleblocks
- Army COE CADD Symbols and Manuals
- MCACES GOLD Cost Estimating System
- NAVFAC Parametric Facilities Cost Generator
- Tri-Service Automated Cost Engineering System (TRACES) and Site Work Model Report
- Tri-Service GIS/Spatial Data Standards

### Disc C

- COE Architectural and Engineering Instructions (AEI)
- COE Master Planning Instructions
- COE Technical Manuals
- COE Engineering Manuals, Regulations, Technical Letters, Circulars and Pamphlets
- COE PC-ARMS (Automated Review Management System) (executable)
- Department of Defense Dependents Schools (DODDS) Standard Educational Specifications
- GSA Design Manuals
- GSA M2: Metric Design Guide
- Military Criteria Indices, including Mil-Bul-34
- Military Handbook 1190 Series Facility Planning and Design Guide
- NIBS Wood Protection Guidelines
- NIBS Metric Guide for Federal Construction
- NIBS Metric in Construction Newsletters
- NIBS Metric Construction Case Studies (7)
- National Institute of Standards and Technology (NIST) Standards Associations Listings
- U.S. Air Force (AF) Manuals, Procedures, Regulations, Engineering Technical Letters

### Disc D

- COE Installation Water Resources Analysis and Planning System (executable)
- NASA Facility Project Implementation Handbook
- NAVFAC Criteria Manuals and Design Policy Letters
- NAVFAC Maintenance & Operations Manuals
- NAVFAC Preliminary Hazard Analysis/List
- NAVFAC NCEL Abstracts
- NAVFAC P-Publications and database
- NAVFAC Regional A/E Guide
- MIL-HDBK-1021 Airfield Rigid Pavement Design Software (executable)
- Value Engineering System (executable)
- Value Engineering Reports
- PRODUCTS ON CCB (Information from Construction Product Manufacturers)

### OPTIONAL DATABASES DISC

- AIA MASTERSPEC®
- CSRF SPECTEXT®
- ACI Building Code and Specifications
- ASTM Standards in Building Codes
- BOCA® National Codes
- SBCCI® Standard Codes
- ICBO®/IAPMO/WFCA Uniform Codes

### MED DISC

- COE Medical Design Guide
- COE AEI, Medical Design Standards
- Military Handbook 1191 Medical/Dental Treatment Facility Criteria
- Mil. Standard 1691E Schedule for Medical/Dental Facilities (with database)
- NAVFAC Medical/Dental Room Layout Guides and Database
- VA Construction Standards H-08-3
- VA Design Guides, Manuals and Handbooks

### EN-DISC

#### (Energy & Environment)

#### ENERGY

- Energy Conservation Voluntary Performance Standards for New Buildings (10 CFR Part 435)
- Guidelines for Procurement of Building Insulation Products Containing Recovered Materials (40 CFR Part 248)
- GSA Envelope Design Guidelines for Federal Office Buildings
- Directory of Federal Contacts on Energy Conservation
- DOD Energy Manager's Handbook
- Army Directors of Engineering & Housing (DEH) Energy Reference
- DOE Envelope and Lighting Compliance Programs (executable) for 10 CFR Part 435
- NIST Building Life Cycle Cost programs (executable): BLCC, Quick Input, DISCOUNT, ERATES
- CERL Life Cycle Cost in Design program (executable)
- DOD Energy Efficient Lighting Catalog
- Rocky Mountain Institute Water-Efficient Technologies Catalog

#### ENVIRONMENTAL

#### Asbestos

- NIBS Asbestos Abatement and Management in Buildings: Model Guide Specifications
- GSA Guidance Manual: Asbestos Operations and Maintenance Work Practices
- Asbestos Regulations (40 CFR Part 763)
- EPA Managing Asbestos in Place, A Building Owner's Guide
- EPA Guidance for Controlling Asbestos-Containing Materials in Buildings
- EPA/HHS/NIOSH Guide to Respiratory Protection for the Asbestos Abatement in Industry

#### Indoor Air Quality

- EPA/HHS Building Air Quality: A Guide for Building Owners and Facility Managers
- Proposed Model Standards for Radon Control in New Buildings (58 FR 19097)
- EPA/HHS/NEHA Introduction to Indoor Air Quality

#### Lead-Based Paint

- Compilation of State Lead-Based Paint Regulations
- Compilation of Federal Lead-Based Paint Regulations and Guidelines, including HUD Lead Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public Housing and Indian Housing



# CD-ROM Resource

This listing is by no means comprehensive. As you probably already know, CD-ROM technology is experiencing explosive growth. There are literally hundreds of new CD-ROM titles, scores of new products and equipment models, numerous CD-ROM/multimedia conferences and trade shows, and dozens of new companies springing up to offer a variety of services and solutions -- and all those numbers are increasing rapidly. The following is just a small sample, collected from numerous sources. We believe the information is accurate and current, but things are changing fast so we can't make any guarantees. Please note that we took published information at face value, so the list is presented with absolutely no recommendations or endorsements of any kind.

## Directories

### CD-ROMs in Print

Meckler  
203/226-6967 Fax 203/454-5840  
(Also publishers of CD-ROM World magazine.)

### The CD-ROM Directory

TPFL Publishing  
202/296-6009 Fax 202/296-6343  
Pemberton Press  
800/248-8466 Fax 203/761-1444  
(Also publishers of CD-ROM Professional magazine.)

### ROI Finder

Design Publishing  
707/939-9306 Fax 707/939-9235

### The CD-ROM of CD-ROMs

Resource International Publishing  
817/582-7373 Fax 817/582-7377

### CD-ROM Finder

Learned Information Inc.  
609/654-6266 Fax 609/654-4309

### European Multimedia Yearbook

800/248-8466 Fax 203/761-1444  
Interactive Media Publications

### SIGCAT Compendium

U.S. Government Printing Office  
202/512-1524 (Federal government titles)

## Catalogues

CD-ROM Warehouse	800/CD-ROM-CD
Faxxon Guide to CD-ROM	800/766-0039
UpData CD-ROM Guide	800/882-2844
EduCorp	619/536-9999
The Bureau	800-828-4766
New Media Source	800/344-2621
Most Significant Bits	216/529-1888
CD-ROM Source	317/726-0022

## Magazines

### CD-ROM World

Meckler  
203/226-6967 Fax 203/454-5840  
(Also publishers of CD-ROMs in Print.)

### CD-ROM Professional

Pemberton Press  
800/248-8466 Fax 203/761-1444  
(Also publishers of The CD-ROM Directory.)

### CD-ROM Today

GP Publishers  
910/852-6711 Fax 910/632-1165

## CD Publishing Services/Consulting

(Most offer a full line of services, often including hardware and software solutions.)

### InfoTech

802/457-1037 Fax 802/457-1038

### Dataware Technologies

800/345-9569 Fax 617/621-0307

### CD-ROM Inc.

800/821-5245 Fax 303/231-9581

### SilverPlatter Information Systems

617/769-2599 Fax 617/769-8763

### Meridian Data

408/438-3100 Fax 408/438-6816

### DataDisc

800/328-2347

### Jouve Software Inc.

800/83Jouve Fax 203/481-1133

### One-Off CD Shops

800/387-1633

### Micro-Retrieval Corp.

617/577-1574 Fax 617/577-9517

### Knowledge Access International

800/2KA-WARE

For building industry organizations specifically:

National Institute of Building Sciences  
202/289-7800 Fax 202/289-1092

## CD-Recordable Hardware/Solutions

### M3 Dimensions, Inc.

800/633-9898 Fax 310/907-6563

### Procom Technology

714/852-1000 Fax 714/852-1221

### InCat Systems

800/77INCAT

### Optical Media International

800/347-2664 Fax 408/378-3519

### MicroBoards

800/225-4414 Fax 612/448-9806

### JVC RomMaker

714/965-2600 Fax 714/968-9071

### KODAK Writable CD

800/CD-KODAK

## CD-ROM Networking Hardware/Solutions

### ProCom Technology

714/852-1000 Fax 714/852-1221

### Logicraft

603/880-5644

### Ornetix

408/744-9095 Fax 408/744-1068

### MicroTest

800/526-9675

### Todd Enterprises

800/445-TODD Fax 718/343-9180

### On Line Computer Systems

800/922-9204 Fax 301/428-2903

### EZ-Systems Inc.

800-533-4520 Fax 508/465-6633

### TAC Systems

205/721-1976 Fax 205/721-0242

### Virtual

800/722-8299 415/572-8406

### FlexSys Corporation

800-533-7756 508/465-6633

### Young Minds

909/335-1350 Fax 909/798-0488

## Buying A CD-ROM Reader

*This is a brief excerpt from a very informative article in "The Driving Range" column, in the May, 1994 issue of CD-ROM Professional. "The CD-ROM Drive Checklist" was written by Becky Lockwood Grossman, Director of Customer Support, SilverPlatter Information, and is reprinted here by permission of Pemberton Press Inc. In the article, each of the following criteria is discussed in more detail. Guidelines like this should be used as general information only. Your specific needs will differ. Please note that CCB will operate with any standard CD-ROM reader; the criteria outlined here are not necessary for use with CCB, although as with any computer program, the performance of the software can be enhanced by the capabilities of the hardware.*

## The Driving Range Checklist

I recommend these minimum guidelines for purchasing a CD-ROM drive. They match or exceed MPC (Multimedia PC) Level 2.

- Double rotational speed -- The near future will offer many triple and quad speed models.
- 300KB/sec average data transfer rate -- This figure increases in conjunction with increased rotation speed.
- 300ms average access time -- My recommendation has decreased another 100ms from last year. Expect this number to start dropping below 200ms for many new models this year.
- 256KB data buffer -- A 256KB buffer complements the increased average data transfer rate.
- Red Book (CD-DA) -- This specifies audio disc compatibility.
- Kodak Photo CD multi-session -- This is important for future applications you may use.
- CD-ROM XA -- This is also important for future applications you may use.
- MPC Level 2 -- The specification indicates compatibility with MPC applications.
- Audio features -- The drive should include RCA jacks, line out jack, volume control, and headphone jack.
- SCSI -- SCSI is best for compatibility; SCSI 2 is an advantage for networks and high-end multi-media PCs.
- Dust-free features -- They are important for the drive reliability and directly influence the MTBF.
- MTBF (Mean time between failure) 25,000 Hours -- This is how long the drive should be expected to operate before a failure may occur.

## Introduction to NIBS



National Institute of  
BUILDING SCIENCES

The National Institute of Building Sciences (NIBS) is a non-profit organization authorized by Congress in 1974 to provide a national forum for addressing issues with a direct impact on the \$500-billion-per-year American building industry, and to help bring promising new technologies into the building process more quickly. NIBS works through a unique consensus process, bringing private industry corporations, organizations and institutions, federal agencies, universities, consumers and other interested groups together to develop criteria and guidance on numerous subjects, including environmental issues such as asbestos, radon, wood and moisture protection, lead-based paint; design for seismic and other hazards; metrication; design for specialized needs such as health care facilities and courthouses; and other research projects. NIBS conducts research, and convenes a number of unique open forums including the Environmental Code Forum, the FEDCON national updates on federal construction, and other meetings to establish national research agendas. NIBS also publishes a wide range of documents, as well as CD-ROM information systems, including the Construction Criteria Base (CCB), a comprehensive source of guide specifications, standards and other criteria.

The following Councils are affiliated with NIBS:

- Building Environment and Thermal Envelope Council
- Building Seismic Safety Council
- CADD Council
- Construction Metrication Council
- Wood Protection Council.

For more information about NIBS, contact Pamela Williams, Manager, Membership and Publications, at 202/289-7800 or fax 202/289-1092.

## Help Desk

### Installation/Operation:

National Institute of Building Sciences 202/289-7800  
Ask for "Technical Support"

### General Information or Questions about Your Subscription:

National Institute of Building Sciences 202/289-7800  
Ask for "CCB Information"

Installing or Operating CCB for Windows: 800-841-5755

SPECSINTACT Operation: 407/853-5251

NAVFAC CES: 804/445-1496

MCACES GOLD: 205/895-3367

TRACES: 904/897-5380

AIA MASTERSPEC®: 800/424-5080

SPECTEXT®: 800/235-3515

VEDIS (Value Engineering): 404/252-1385

PC-ARMS: 916/557-7999:

## And Help at Your Fingertips: Right on CCB

- F1** Press any time for context-sensitive help (this feature will be expanded on the 2nd Quarter CCB due out in August).
- Index** From the Main Menu, select "EXEC", then "CCB Information", then "Indexes" for lists of CCB's contents, organized by Main Menu categories, that you can view, search, copy or print.
- Manual** A comprehensive, concise, plain-English guide to using CCB is right on the disc. From the Main Menu, select "EXEC", then "CCB Information", then "User Manual," to view, search, copy or print.
- More** Executable programs on CCB -- e.g., SPECSINTACT, CES, MCACES, TRACES, Value Engineering, Building Life Cycle Cost, etc. -- also have User Guides. CCB for Windows has extensive Read Me and Help files. And on-screen messages give basic information throughout installation, configuration and operation of CCB.

## The CCB Bulletin

is published quarterly by the

National Institute of Building Sciences

1201 L Street N.W. Suite 400 Washington, D.C. 20005, (202) 289-7800.

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George Royal, Programming  
Diane Strock, Applications

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Chairman  
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# SPECSINTACT *Special*

*SPECSINTACT is software developed and maintained by NASA. SPECSINTACT Special is a regular feature of CCB Bulletin, with information for users, provided directly by SPECSINTACT Headquarters in Kennedy Space Center. This is a special edition, presenting an introduction to the many features and benefits of SPECSINTACT.*

SPECSINTACT is an automated specification processing system that uses standard guide specifications (master text) for the preparation of facility construction projects. The system is designed for use by engineers, architects, specification writers, project managers and construction managers for facility design and construction projects.

**SPECSINTACT USER SUPPORT DESK:  
(407) 853-5251**

*SPECSINTACT is a trademark of the National Aeronautics and Space Administration.*

## SPECSINTACT FEATURES

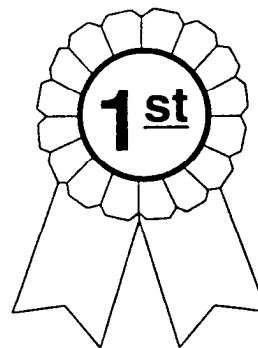
Version 2.0 for Windows (to be released July 1994)



### Quality Assurance

SPECSINTACT provides quality assurance features to reduce man hours spent on verifying the accuracy of the following items contained in the specifications:

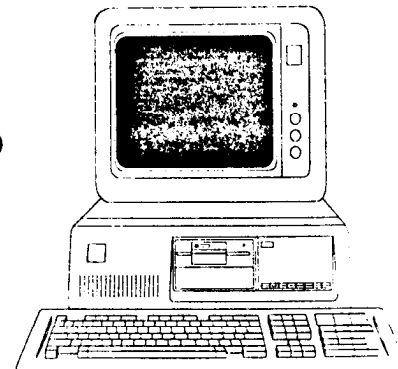
- Technical References
- Submittal Requirements
- Test Requirements
- Section References
- Bracket Options



### Automated Features

SPECSINTACT provides the following automated features for printed specifications:

- Project Table of Contents**  
Generate and print a table of contents for the complete job.
- Section Tables of Contents**  
Generate and print tables of contents for each section.
- Customized Sections**  
Customize and print Section 01300 (Submittals) and Section 01090 (Sources for Reference Publications).
- Renumbering of Paragraphs**  
Automatically renumber paragraphs within each printed section.
- Removal of Notes**  
Print sections with or without specifier notes.



**SPECSINTACT**

# SPECSINTACT *Special*



## Editor Features

### SGML Format

Section files are in Standard Generalized Markup Language (SGML) format.

### Automated Redlining

Customized redlining, such as underlining and striking out text, may be used to revise section text.

### Multiple Files Open at Once

More than one file may be open and displayed at once.

### Tool Box

A tool box provides quick access to editing functions.

### Engineering Dictionary

An Engineering Dictionary is included.

### Reveal/Conceal Notes

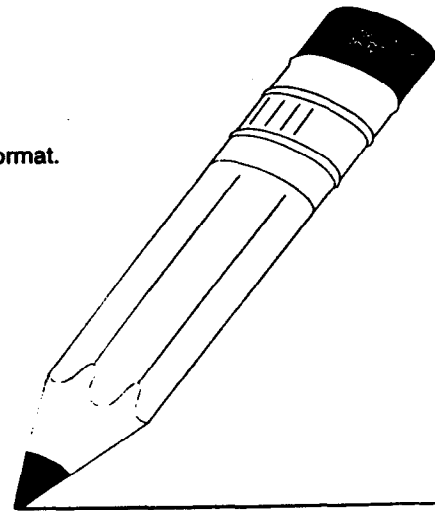
Specifier notes in the text may be viewed or concealed while editing.

### Reveal/Conceal Tags

SGML codes in the text may be viewed or concealed while editing.

### English or Metric

Section text may be viewed with English measurements, metric measurements, or both.



## Other Features

### On-Line Help

Extensive on-line help is available from the menu or by pressing F1.

### Job Status Information

A Job status screen is provided to assist in project management.

### Army ENG Form 4288

Generate and print the Army ENG Form 4288 Submittal report on HP Laserjet or Postscript printers.

Build a text file that can be used to electronically track and update submittal information for a project.

## SPECSINTACT For Windows

(To be released July 1994)

### Hardware / Software Requirements

#### Minimum

IBM Personal Computer 386

or True Compatible / 16MHz

VGA Monitor

2 MB Memory

Laser Printer (capable of printing 12 cpi)

80 MB Hard Disk

1.2 MB Floppy Disk Drive

Microsoft Mouse

CD-ROM Reader

Microsoft Windows - Version 3.1

Disk Operating System (DOS) - Version 3.1 or greater

#### Recommended

IBM Personal Computer 486

or True Compatible / 25 MHz

Super VGA Monitor

4 MB Memory

Laser Printer (capable of printing 12 cpi)

120 MB Hard Disk

1.44 MB Floppy Disk Drive

Microsoft Mouse

CD-ROM Reader

Microsoft Windows - Version 3.1

Disk Operating System (DOS) - Version 5.0

Microsoft Windows Compatible Network

# The Newsletter for CCB Users

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WASHINGTON, DC

National Institute of  
BUILDING SCIENCES  
1201 L Street, NW, Suite 400  
Washington, D.C. 20005



The following federal agencies participate in CCB by distributing their information through the system and encouraging the use of CCB in their agencies and the building community.

- Army Corps of Engineers
- Bureau of Reclamation
- Department of Defense
- Department of Energy
- Department of Housing and Urban Development
- Department of Veterans Affairs
- Environmental Protection Agency
- Federal Aviation Administration
- Federal Highway Administration
- General Services Administration
- Naval Facilities Engineering Command
- Occupational Safety and Health Administration
- National Aeronautic and Space Administration
- National Institute of Health
- National Institute of Standards and Technology
- U. S. Air Force

The following professional societies and model code bodies participate in CCB by distributing information through the system.

- American Institute of Architects
- Building Officials and Code Administrators International
- Construction Sciences Research Foundation
- International Association of Plumbing and Mechanical Officials
- International Conference of Building Officials
- Western Fire Chiefs Association

The following associations have agreed to participate in CCB by allowing their referenced standards and documents to be incorporated on CCB. The National Institute of Building Sciences expresses our appreciation to these organizations and welcomes their participation in the further enhancement of CCB as a unique resource for the building community.

- ASTM
- Air Conditioning Contractors of America
- Air Diffusion Council
- Air Movement and Control Association
- Aluminum Association
- American Association of Nurserymen
- American Association of Textile Chemists and Colorists
- American Concrete Institute
- American Concrete Pipe Association
- American Gas Association
- American Institute for Hollow Structural Sections

- American Institute of Steel Construction
- American Institute of Timber Construction
- American Iron and Steel Institute
- American Plywood Association
- American Sod Producers Association
- American Welding Society
- American Wood-Preservers' Association
- American Wood Preservers' Bureau
- Architectural Woodwork Institute
- Asphalt Institute
- Asphalt Roofing Manufacturers Association
- Associated Air Balance Council
- Association of Home Appliance Manufacturers
- Brick Institute of America
- Building Systems Institute
- California Redwood Association
- Cast Iron Soil Pipe Institute
- Cedar Shake and Shingle Bureau
- Ceilings and Interior Systems Construction Association
- Chain Link Fence Manufacturers Institute
- The Chlorine Institute
- Compressed Gas Association
- Concrete Plant Manufacturers Bureau
- Concrete Reinforcing Steel Institute
- Conveyor Equipment Manufacturers Association
- Copper Development Association
- Decorative Laminate Products Association
- Diesel Engine Manufacturers Association
- Door and Hardware Institute
- Ductile Iron Pipe Research Association
- Exterior Insulation Manufacturers Association
- Factory Mutual System
- Flat Glass Marketing Association
- Fluid Sealing Association
- Foundation of the Wall and Ceiling Industry
- Glass Tempering Association
- Gypsum Association
- Hardwood Plywood and Veneer Association
- Hydronics Institute
- Indiana Limestone Institute of America
- Industrial Gas Cleaning Institute
- Instrument Society of America
- Insulated Steel Door Institute
- International Institute of Ammonia Refrigeration
- International Municipal Signal Association
- Iron and Steel Society
- Joint Industrial Council
- Laminators Safety Glass Association
- Lightning Protection Institute
- Maple Flooring Manufacturers Association
- Mechanical Power Transmission Association
- Metal Building Manufacturers Association
- Metal Lath/Steel Framing Association

- Midwest Insulation Contractors Association
- National Asphalt Pavement Association
- National Association of Architectural Metal Manufacturers
- National Association of Corrosion Engineers
- National Board of Boiler and Pressure Vessel Inspectors
- National Building Granite Quarries Association
- National Cable Television Association
- National Council on Radiation Protection and Measurement
- National Environmental Balancing Bureau
- National Fluid Power Association
- National Forest Products Association
- National Hardwood Lumber Association
- National Kitchen Cabinet Manufacturers Association
- National Oak Flooring Manufacturers Association
- National Particleboard Association
- National Pest Control Association
- National Ready-Mixed Concrete Association
- National Terrazzo and Mosaic Association
- National Wood Window and Door Association
- Northeastern Lumber Manufacturers Association
- Porcelain Enamel Institute
- Public Utilities Commission of California
- Resilient Floor Covering Institute
- Rubber Manufacturers Association
- Safety Glazing Certification Council
- Screen Manufacturers Association
- Sealant, Waterproofing and Restoration Institute
- Sheet Metal and Airconditioning Contractors National Association
- Single Ply Roofing Institute
- Society of Cable Television Engineers
- Society of the Plastics Industry
- Solar Rating and Certification Corporation
- Southern Cypress Manufacturers Association
- Southern Pine Inspection Bureau
- Steel Door Institute
- Steel Tank Institute
- Steel Window Institute
- Tile Council of America
- Truck Mixer Manufacturers Bureau
- Truss Plate Institute
- Uni-Bell PVC Pipe Association
- Water Pollution Control Federation
- Water Quality Association
- West Coast Lumber Inspection Bureau
- Western Wood Products Association
- H. P. White Laboratory
- Wood and Synthetic Flooring Institute
- Wood Moulding and Millwork Producers Association
- Woodwork Institute of California

## **APPENDIX I: ROOFING DESIGN CRITERIA**

1. COMNAVFACENGCOM letter serial U-273, 04Bg/CBK of 15 JUL 1985



DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING COMMAND  
200 STOVALL STREET  
ALEXANDRIA, VA 22332-2300

O4Bg/CBK  
Ser 85-273

15 JUL 1985

From: Commander, Naval Facilities Engineering Command

Subj: ROOFING DESIGN CRITERIA

Encl: (1) New NAVFAC Roofing Design Criteria

1. Enclosure (1) provides new NAVFAC roofing design criteria. Addressees are requested to implement the new criteria in all new facilities designs.
2. The new design requirements will be incorporated into the NAVFAC roofing guide specifications and the new roofing design manual now in preparation.
3. NAVFAC point of contact for any questions on this matter is Mr. Columbus Key, Code 04Bg, telephone (202) 325-0308, autovon 221-0308.

*Michael Yachnis*  
MICHAEL YACHNIS  
By direction

Distribution:

COMPACNAVFACENGCOM  
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CHESNAVFACENGCOM (Code 04)  
NORTHNAVFACENGCOM (Code 04)  
OICC TRIDENT (Code 04)

## NEW NAVFAC ROOFING DESIGN CRITERIA

1. Minimum roof slope design requirement is changed from 1/4 inch per foot to 1/2 inch per foot. Roofs designed with 1/4 inch per foot slope often develop poor drainage-and ponding. This is a major cause of premature roofing failure. Allowable design deflection and construction tolerance makes 1/4 inch per foot roof slope impractical.

2. Use perimeter roof drains in lieu of interior roof drains when possible. Interior roof drains should not be used on buildings having a width of 100 feet or less. When interior roof drains are used they should be located at mid-span of roof deck between supporting walls and columns.. Also, provisions must be made to accommodate differential movement between roof drains end leaders. The roof drain should be designed to move with the roof assembly when subjected to deflection. If this movement is restricted it can break flashing connections between the roof drain and roofing membrane, allowing water to enter.

3. Eliminate the use of parapets, copings, or similar types of raised peripheral walls where practicable. Where their use is unavoidable, design as follows:

a. Parapets for standard firewalls through combustible roofs shall be a minimum of 36 inches in height. When not used as firewalls parapet height should not exceed 18 inches.

b. Design masonry parapet walls with sufficient horizontal joint reinforcement and control joints to control cracking. Control joints should be designed with backer rods and elastomeric sealant to prevent water from entering the cracks.

c. Assure that coping design includes sufficient attachment to parapet walls to withstand local wind and seismic forces.

d. To prevent roof collapse in the event the primary roof drainage system fails, provide scuppers through the parapet walls to serve as emergency overflow drains.

4. Design roof flashing details to accommodate differential movement and provide the most maintenance free design concepts. Specific examples are as follows:

a. Minimize the number of penetrations through the roof by grouping pipes and conduits into fewer strategic locations. Set attachment one.

b. Avoid placing penetrations at low points of the roof.

c. Do not use pitch pockets. Set attachments 2 and 3. Pitch pockets require frequent inspection and maintenance to maintain A waterproof seal, Use flashing collars with umbrella flashings. Set attachment 4.



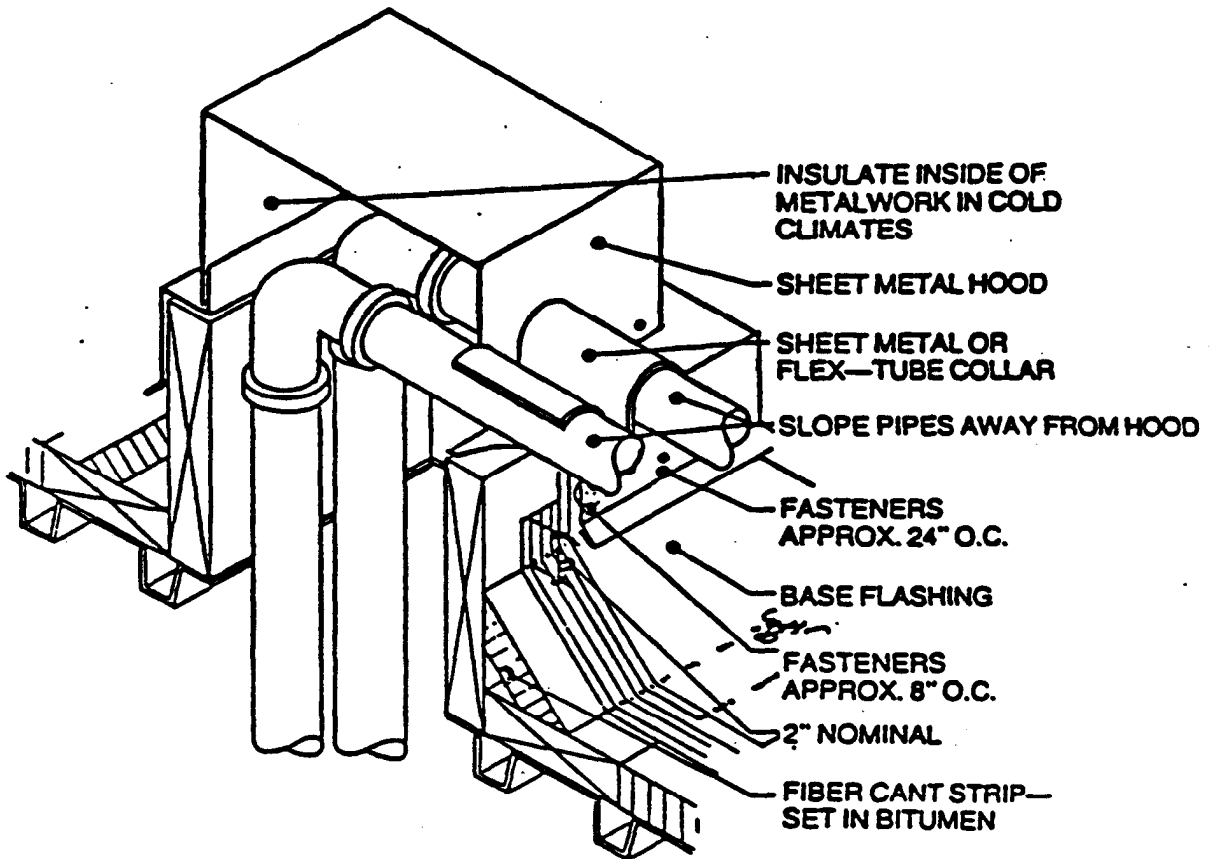
d. Do not use surface-applied cap flashings. See attachment 5. Surface applied cap flashings have a high rate of failure. Install all cap flashings in reglets raked in masonry joints or cut or cast into concrete. See attachment. 6.

e. Locate vent stacks, other individual penetrations through the roof, and projections above the roof not less than 18 inches apart. See attachment 7. Flashings for vent stacks should be as illustrated in attachment 8.

f. When practicable elevate metal roof edges to keep metal work above the water line. See attachments 9 and 10. Avoid strip flashing metal item longer than 2 feet into the roofing membrane. Dissimilar coefficients of expansion and contraction of metal and bituminous materials can cause splits in the roofing.. Where stripping light gauge metal items lower than two feet into the roofing membrane cannot be avoided follow guidance provided by attachment 11 to reduce the chance of splitting.

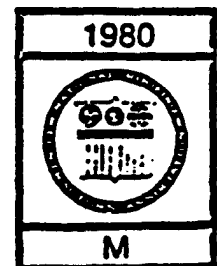
Install roofing expansion joint covers above the water line. See attachments 12 and 13.

h. Where there is potential for deflection of the roof assembly at abutting non-supporting walls and penetrations, design flashings to allow for differential vertical movement. See attachments 14, 15, and 16.

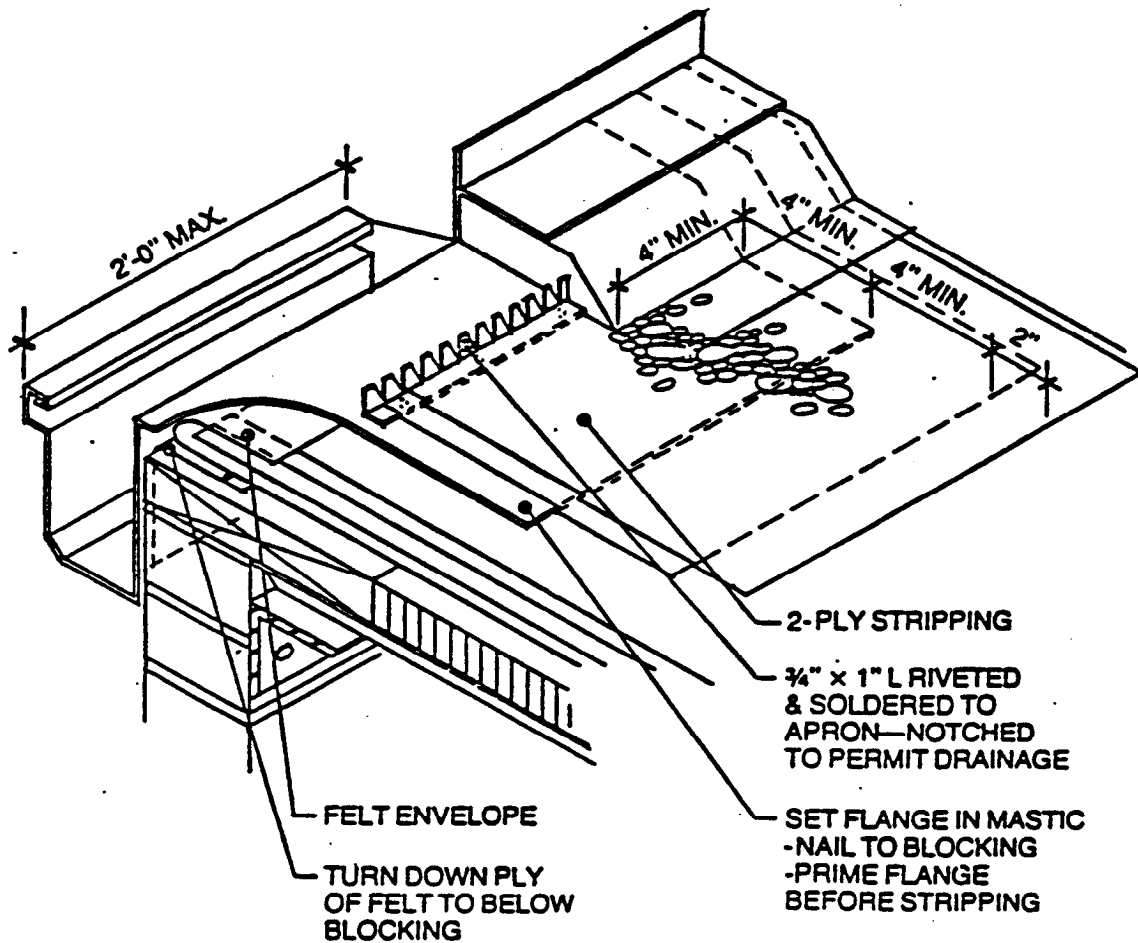


**NOTE:**

**THIS DETAIL ILLUSTRATES ANOTHER METHOD OF ELIMINATING PITCH POCKETS AND A SATISFACTORY METHOD OF GROUPING PIPING THAT MUST COME UP ABOVE THE ROOF SURFACE.**



**SCUPPER THROUGH ROOF EDGE**



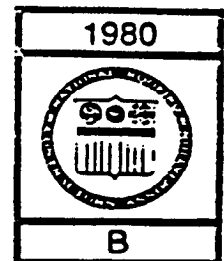
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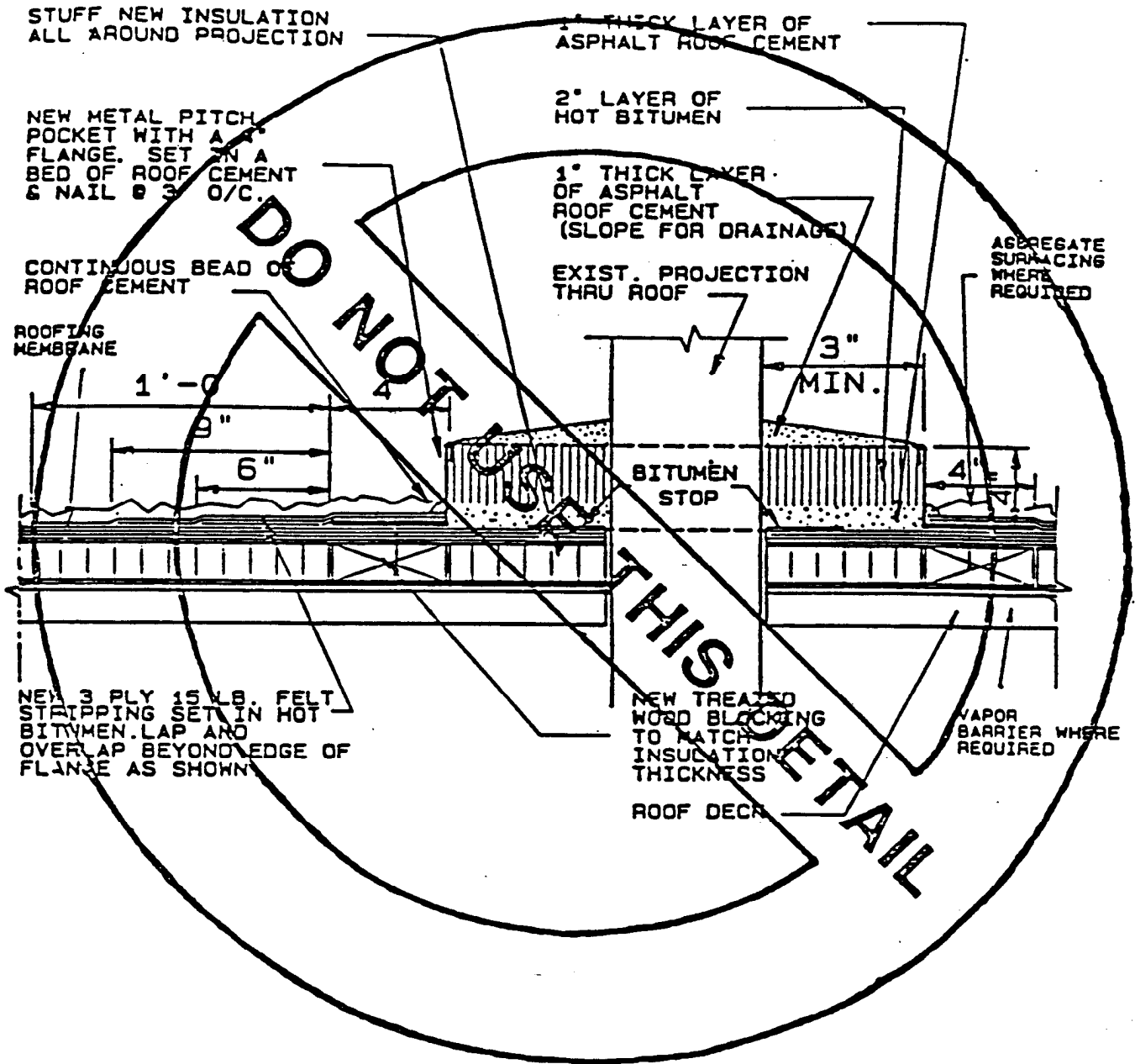
THIS DETAIL SHOULD BE USED ONLY WHERE THE DECK IS SUPPORTED BY THE OUTSIDE WALL

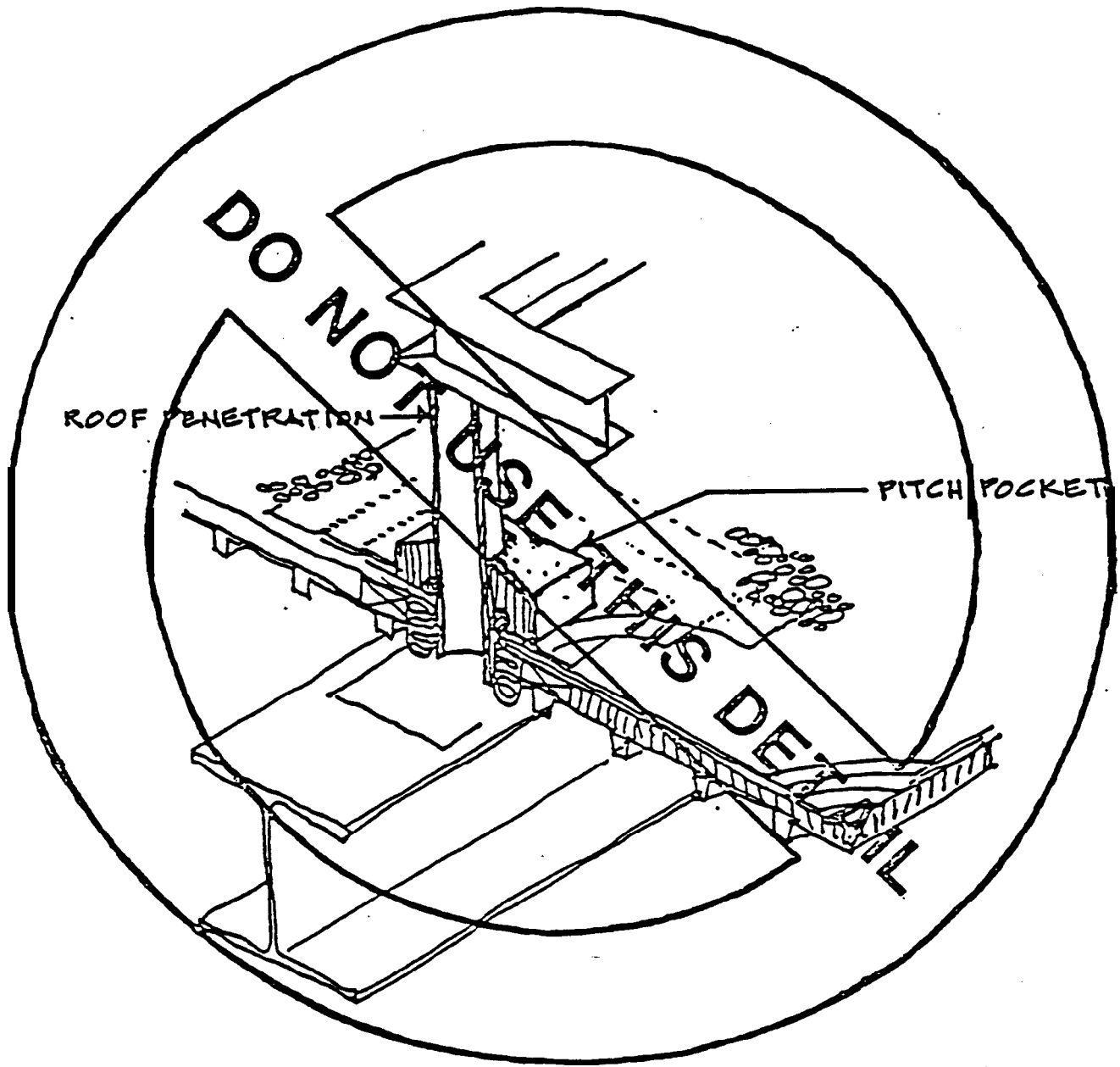
THIS DETAIL CAN BE ADAPTED TO ROOF EDGES SHOWN IN DETAILS "G" AND "O" AND IS EASY TO INSTALL AFTER THE BUILDING IS COMPLETED. THIS DETAIL IS USED TO RELIEVE STANDING WATER IN AREAS ALONG THE ROOF EDGE. ALL ROOF SURFACES SHOULD BE SLOPED TO DRAIN.

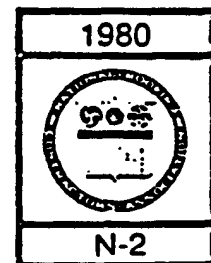
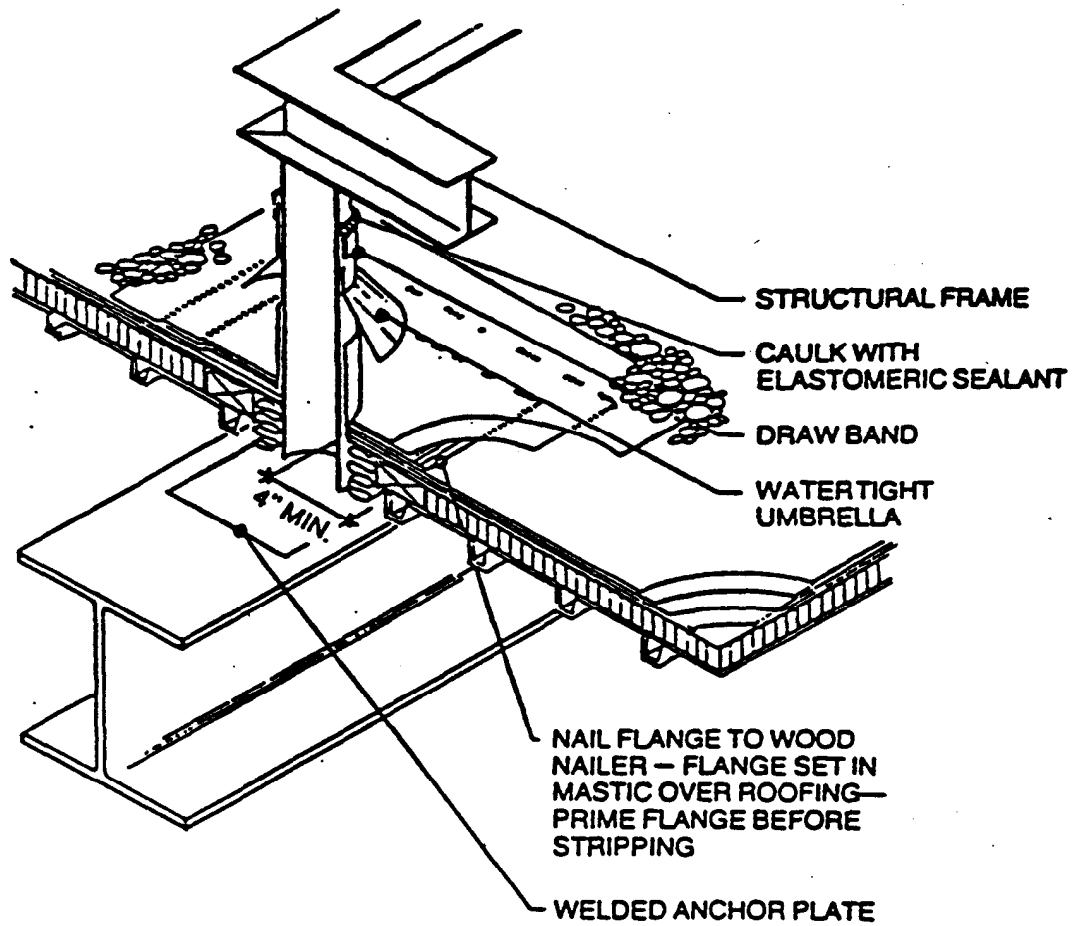
ATTACH NAILER TO MASONRY WALL. REFER TO FACTORY MUTUAL DATA SHEET 1-49.

WOOD BLOCKING MAY BE SLOTTED FOR VENTING WHERE REQUIRED.

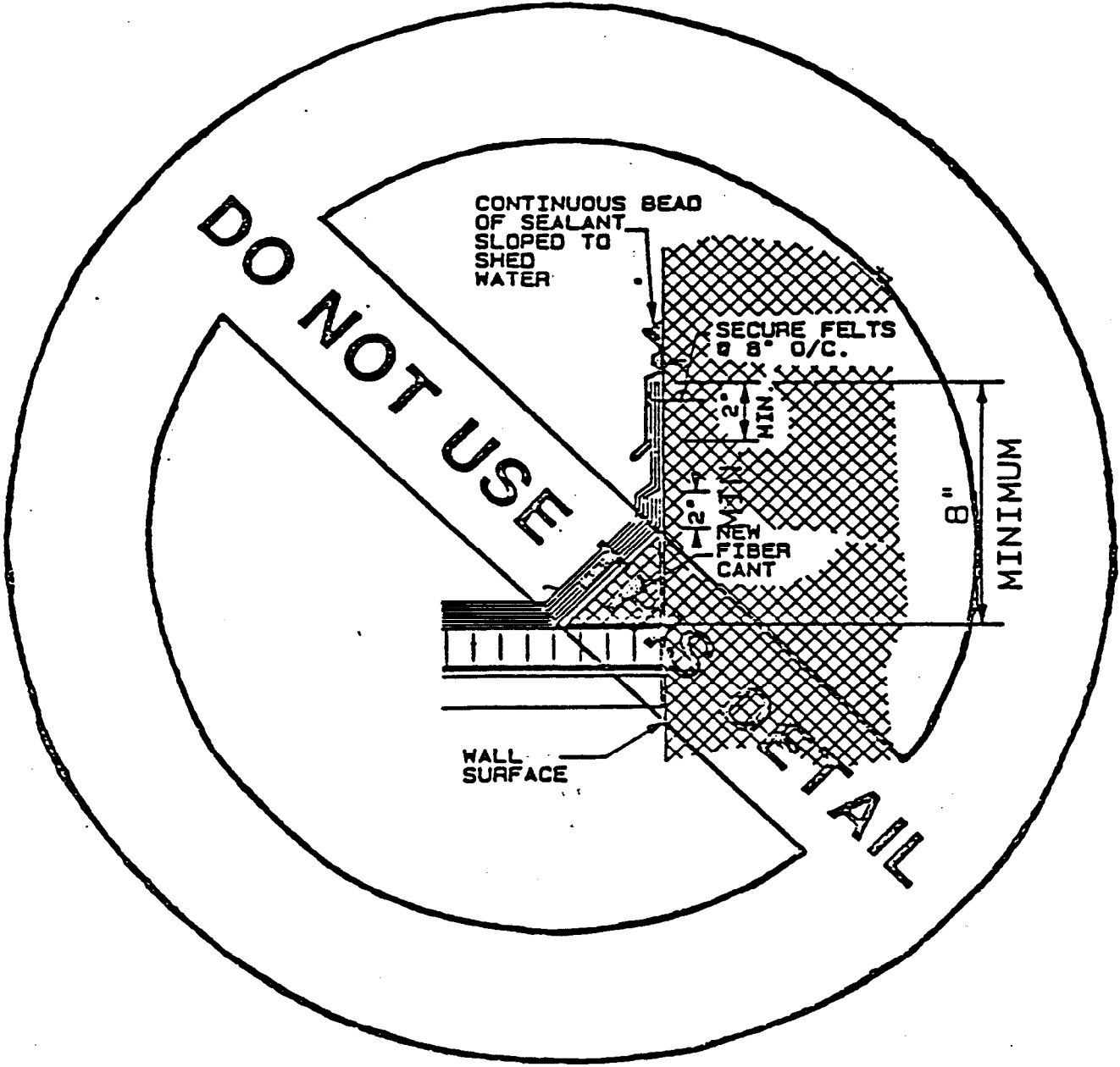


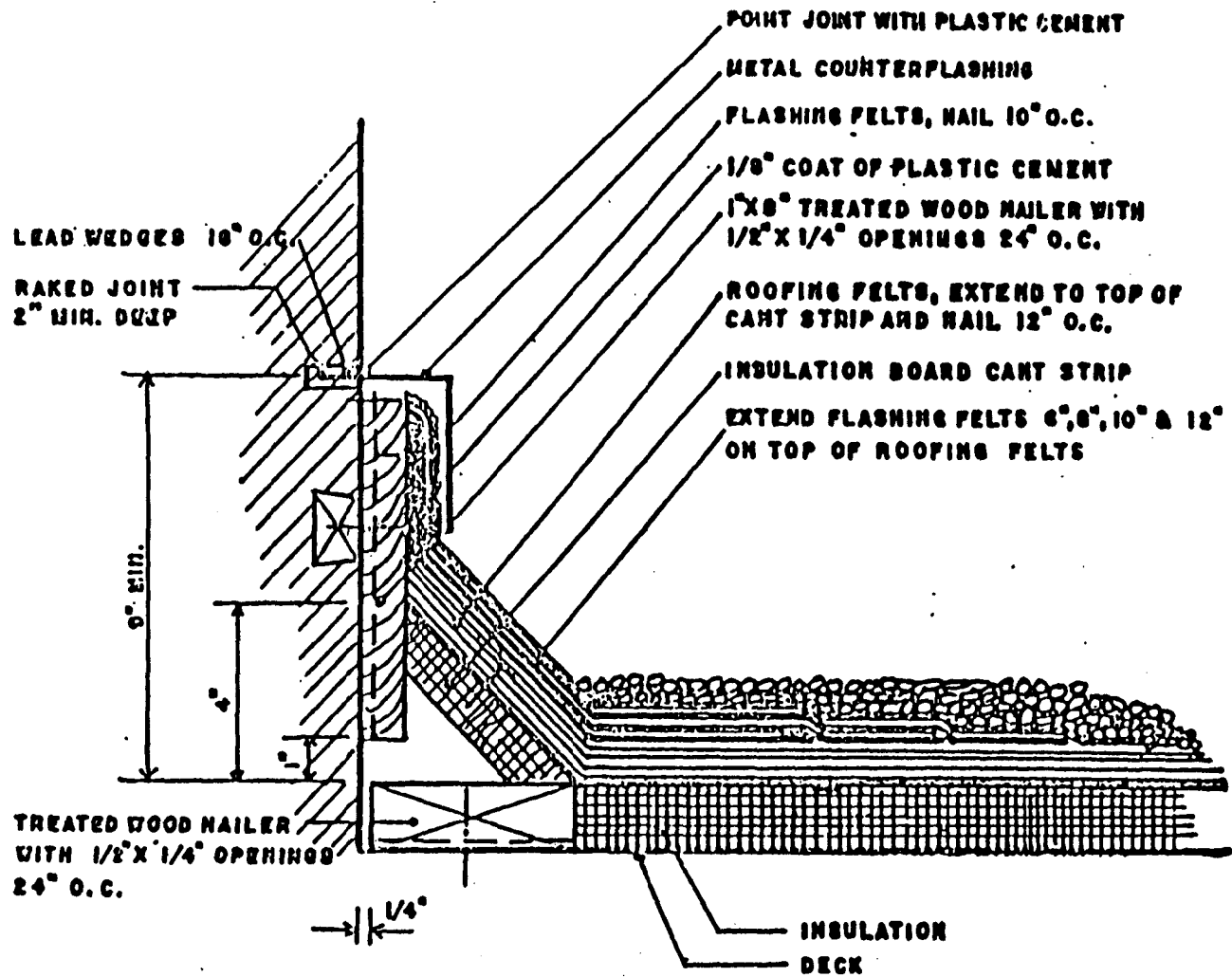






ATTACHMENT (4)

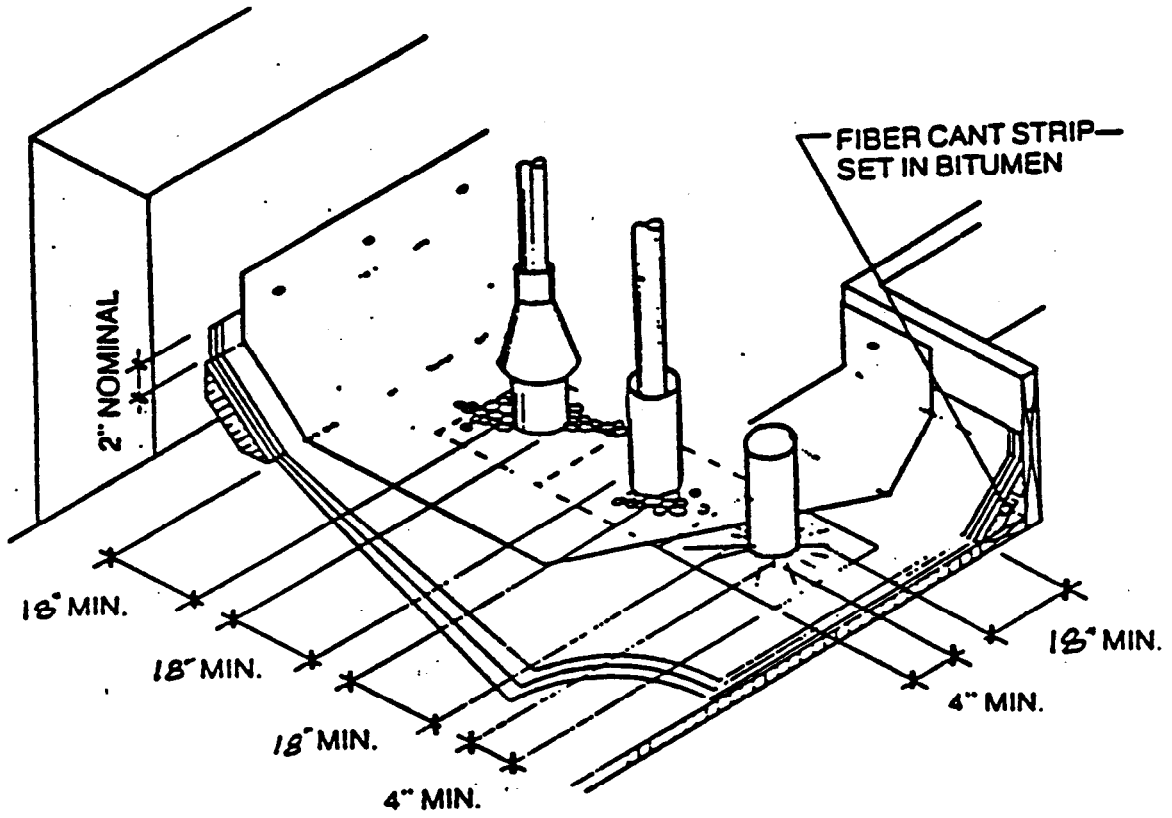


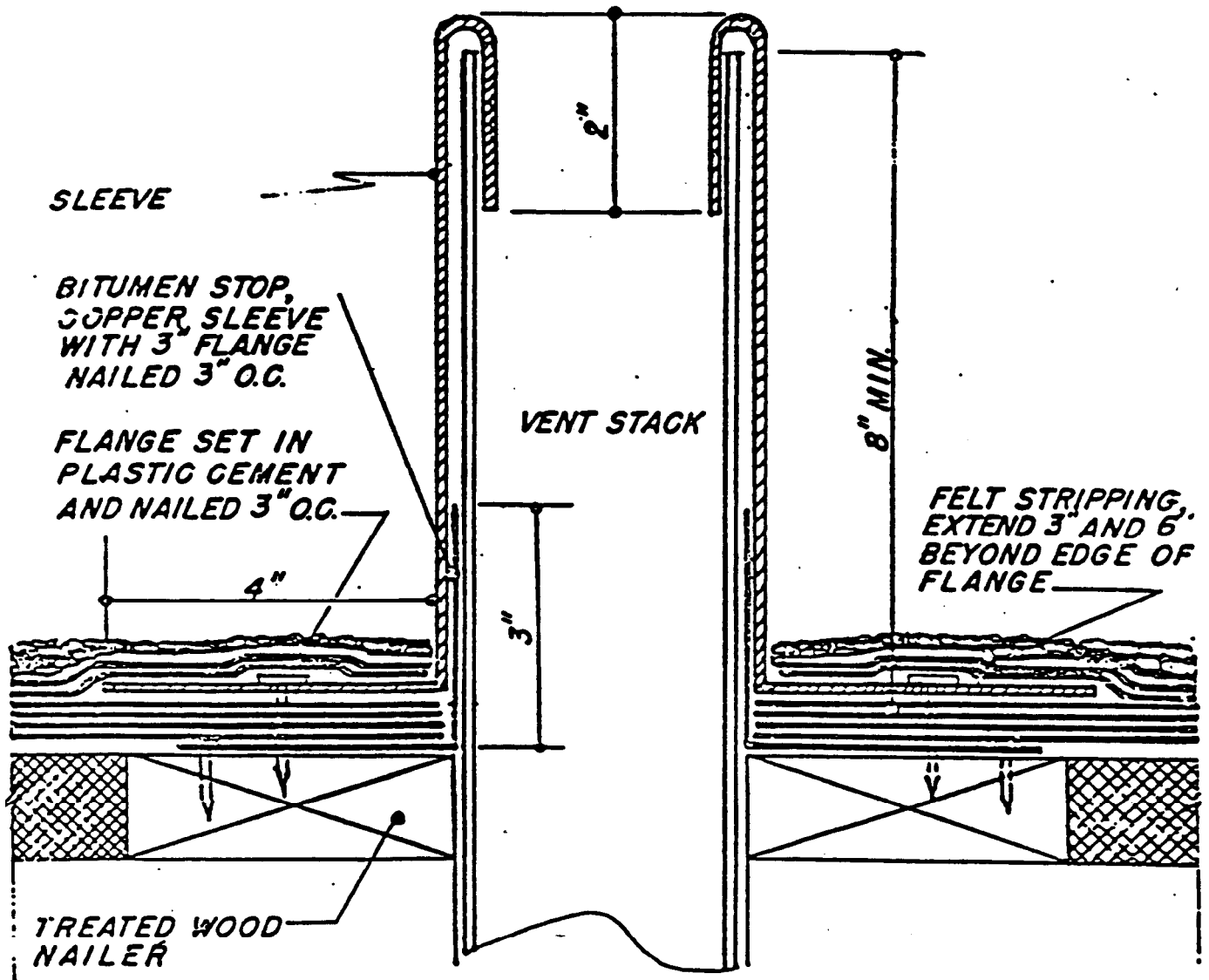


VENTED WALL FLASHING DETAIL

ATTACHMENT (6)

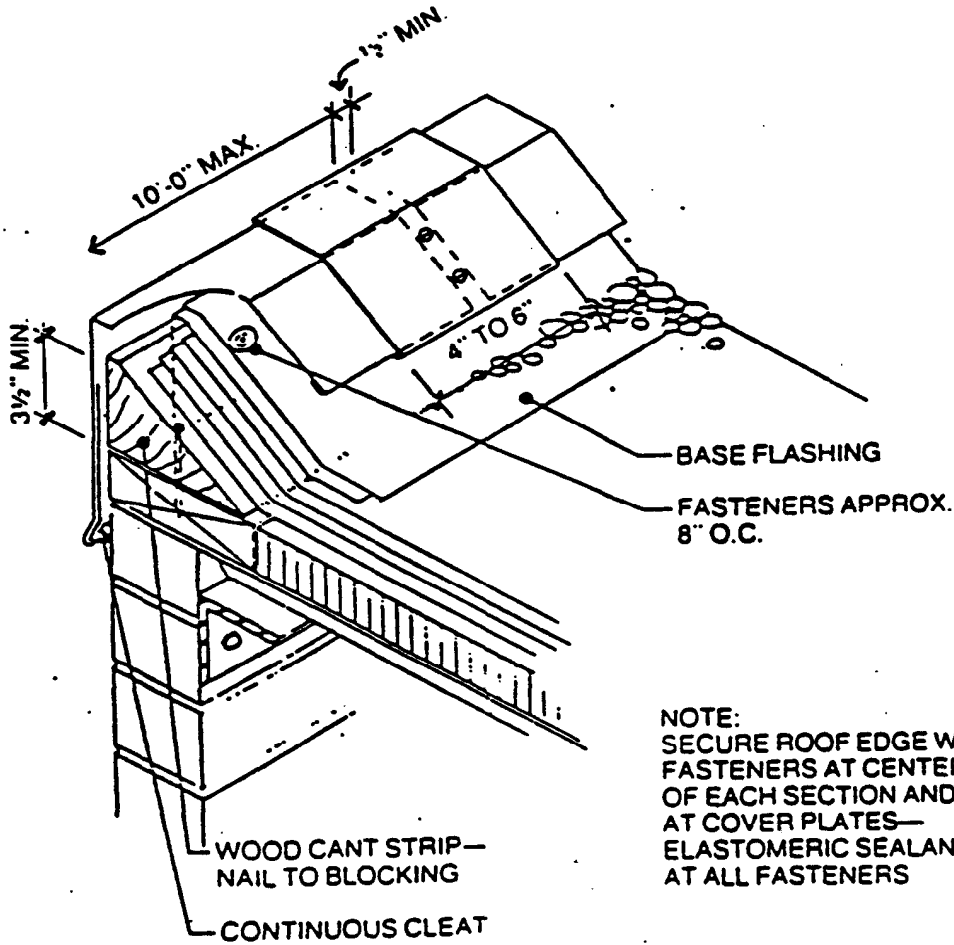






**VENT STACK DETAIL**

**LIGHT METAL ROOF EDGE**



**NOTE:**  
 SECURE ROOF EDGE WITH TWO  
 FASTENERS AT CENTER  
 OF EACH SECTION AND  
 AT COVER PLATES—  
 ELASTOMERIC SEALANT  
 AT ALL FASTENERS

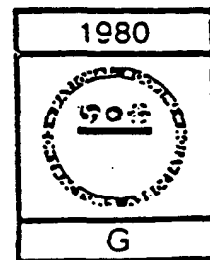
**NOTES.**

THIS DETAIL SHOULD BE USED ONLY WHERE THE DECK IS SUPPORTED BY THE OUTSIDE WALL

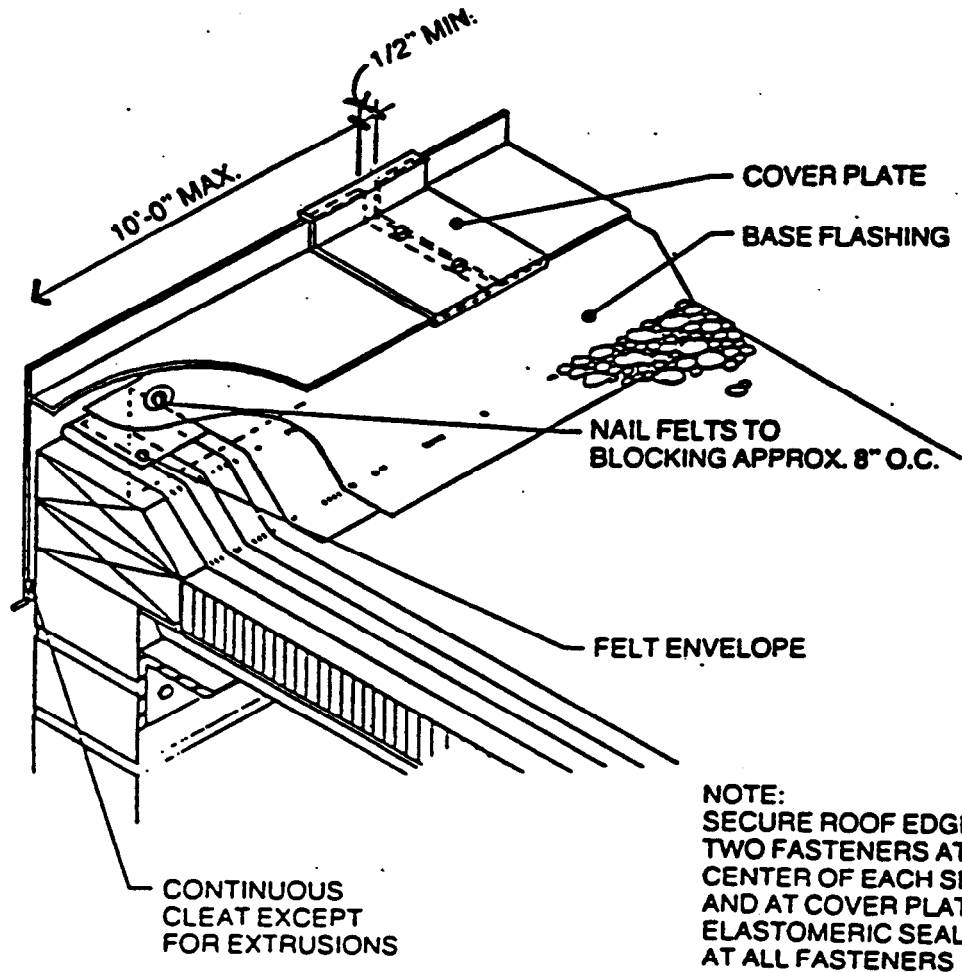
THIS DETAIL IS SIMILAR TO DETAILS "A" AND "O" THE CANT STRIP PLACED AS SHOWN. WILL RESULT IN A HIGHER FASCIA LINE THE NO 15 FELT SHOWN BEHIND THE FASCIA PROVIDES PROTECTION FOR THE FLASHING EDGE AND SEALS THE SYSTEM UNTIL THE METAL WORK IS INSTALLED

ATTACH NAILER TO MASONRY WALL REFER TO FACTORY MUTUAL DATA SHEET 1-49

WOOD BLOCKING MAY BE SLOTTED FOR VENTING WHERE REQUIRED



## HEAVY METAL ROOF EDGE



**NOTE:**  
 SECURE ROOF EDGE WITH  
 TWO FASTENERS AT  
 CENTER OF EACH SECTION  
 AND AT COVER PLATES—  
 ELASTOMERIC SEALANT  
 AT ALL FASTENERS

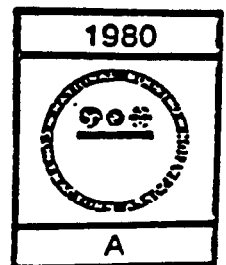
**NOTES:**

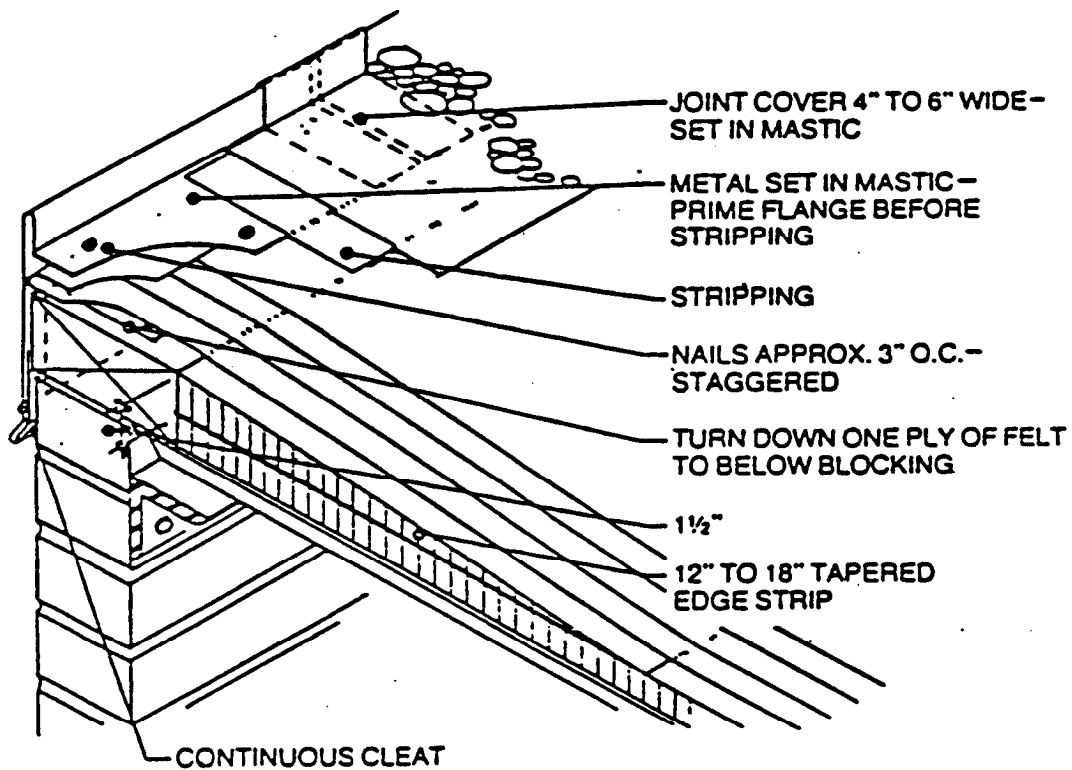
THIS DETAIL SHOULD BE USED ONLY WHERE THE DECK IS SUPPORTED BY THE OUTSIDE WALL.

METALS OF 22 GAUGE STEEL, 0.050" ALUMINUM, 24 GAUGE STAINLESS STEEL OR HEAVIER ARE APPROPRIATE FOR THIS DETAIL. METALS OF THIS WEIGHT ARE VERY RIGID WHEN FORMED, AND FASTENING AT THE CENTER-LINE AND JOINT COVER WILL ALLOW EXPANSION AND CONTRACTION WITHOUT DAMAGING THE BASE FLASHING MATERIAL.

ATTACH NAILER TO MASONRY WALL. REFER TO FACTORY MUTUAL DATA SHEET 1-49

WOOD BLOCKING MAY BE SLOTTED FOR VENTING WHERE REQUIRED





**NOTES:**

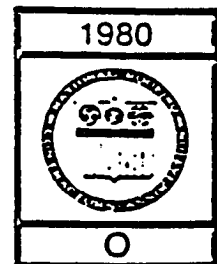
ENVELOPE SHOWN FOR COAL TAR PITCH AND LOW SLOPE ASPHALT.

ATTACH NAILER TO MASONRY WALL REFER TO FACTORY MUTUAL DATA SHEET 1-49.

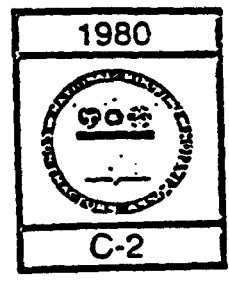
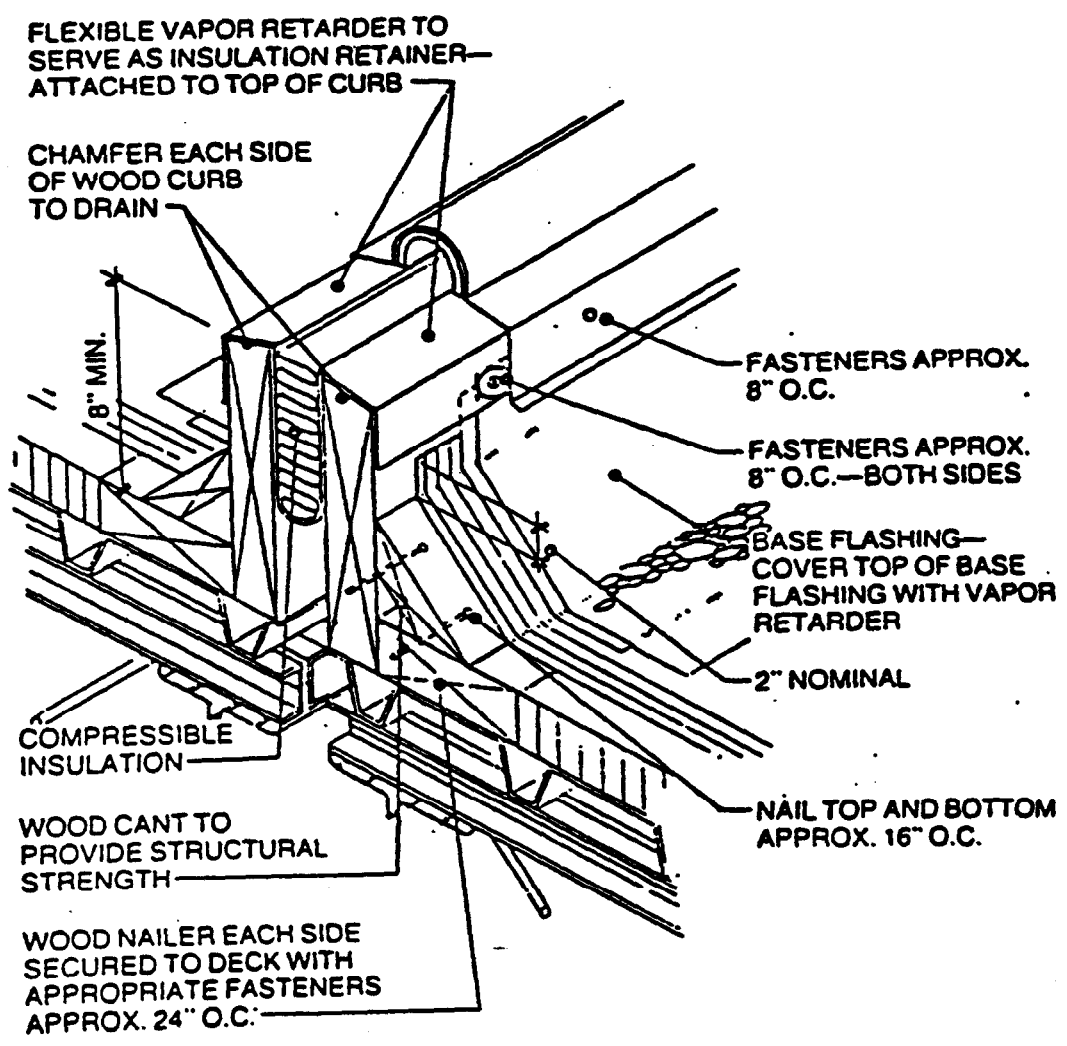
THIS DETAIL SHOULD BE USED ONLY WHERE DECK IS SUPPORTED BY THE OUTSIDE WALL.

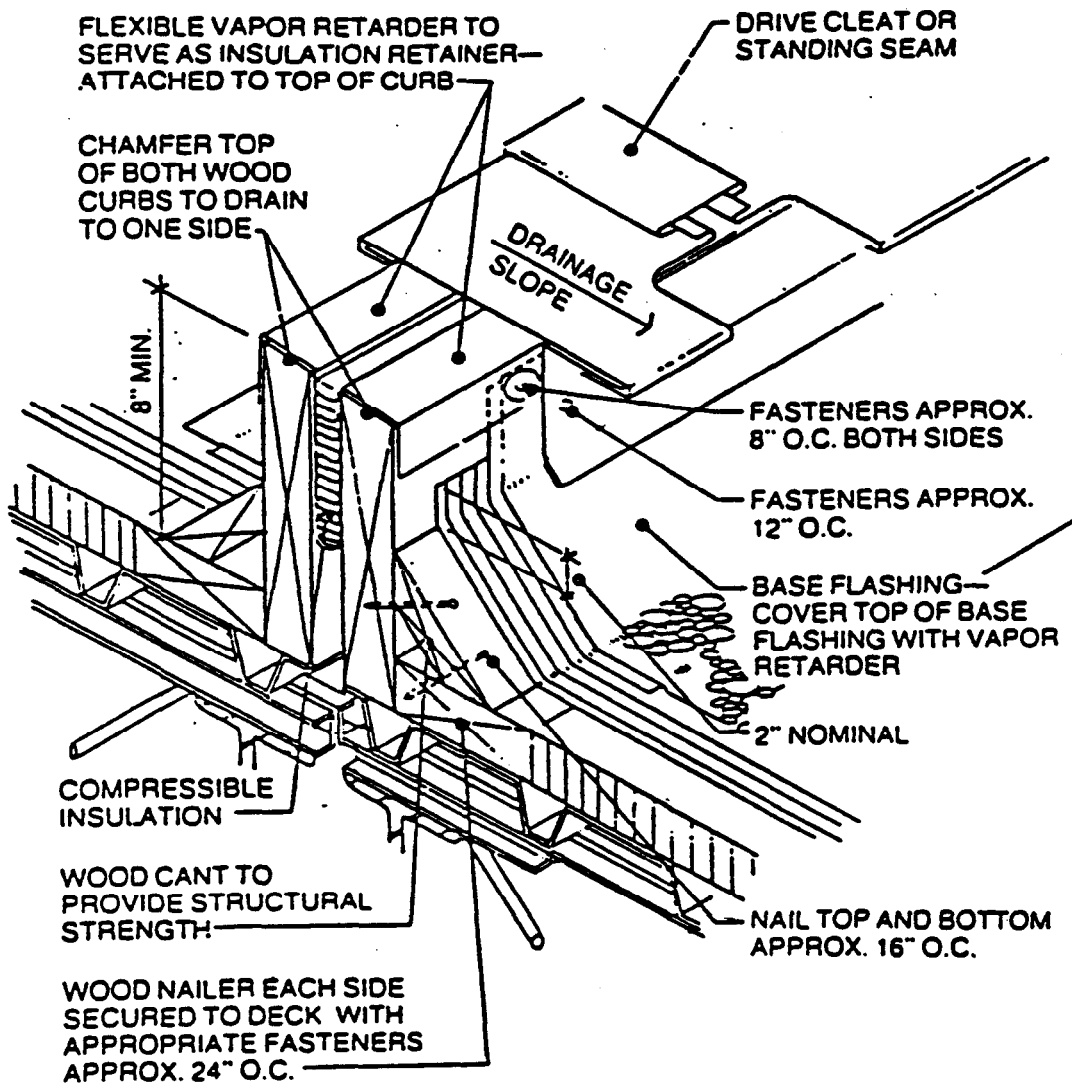
THIS DETAIL SHOULD BE USED WITH LIGHT GAUGE METALS, SUCH AS 16 OZ. COPPER, 24 GAUGE GALVANIZED ALUMINUM OR 0.040" ALUMINUM. A TAPERED EDGE STRIP IS USED TO RAISE THE GRAVEL STOP. FREQUENT NAILING IS NECESSARY TO CONTROL THERMAL MOVEMENT.

WOOD BLOCKING MAY BE SLOTTED FOR VENTING WHERE REQUIRED.



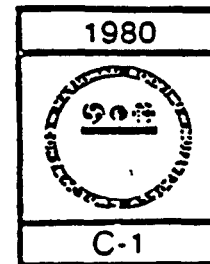
**ATTACHMENT (11)**

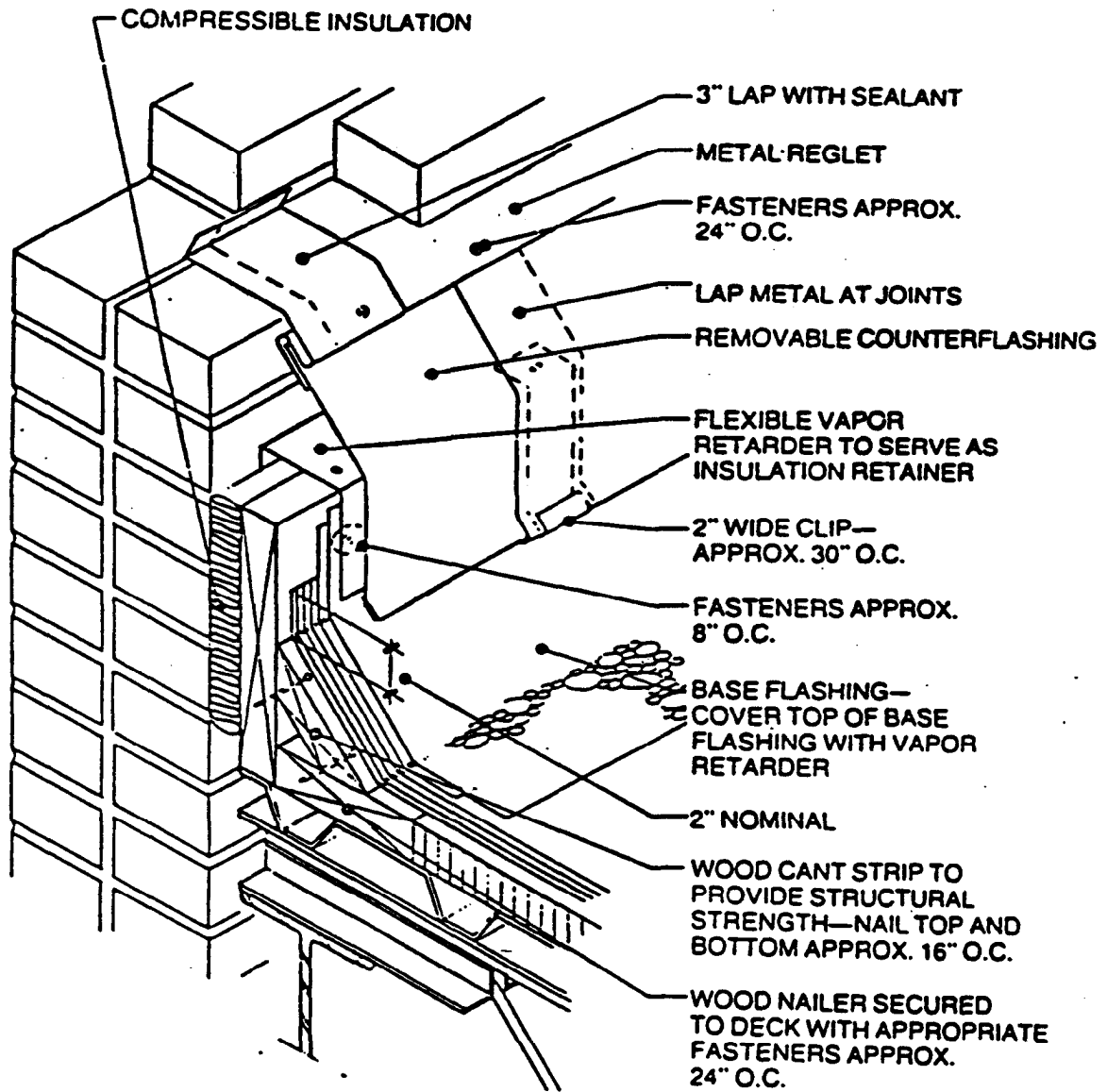




**NOTE**

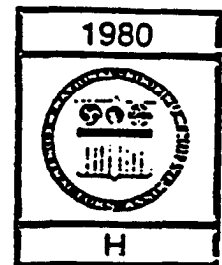
THIS DETAIL ALLOWS FOR BUILDING MOVEMENT IN BOTH DIRECTIONS IT HAS PROVEN SUCCESSFUL WITH MANY CONTRACTORS FOR MANY YEARS





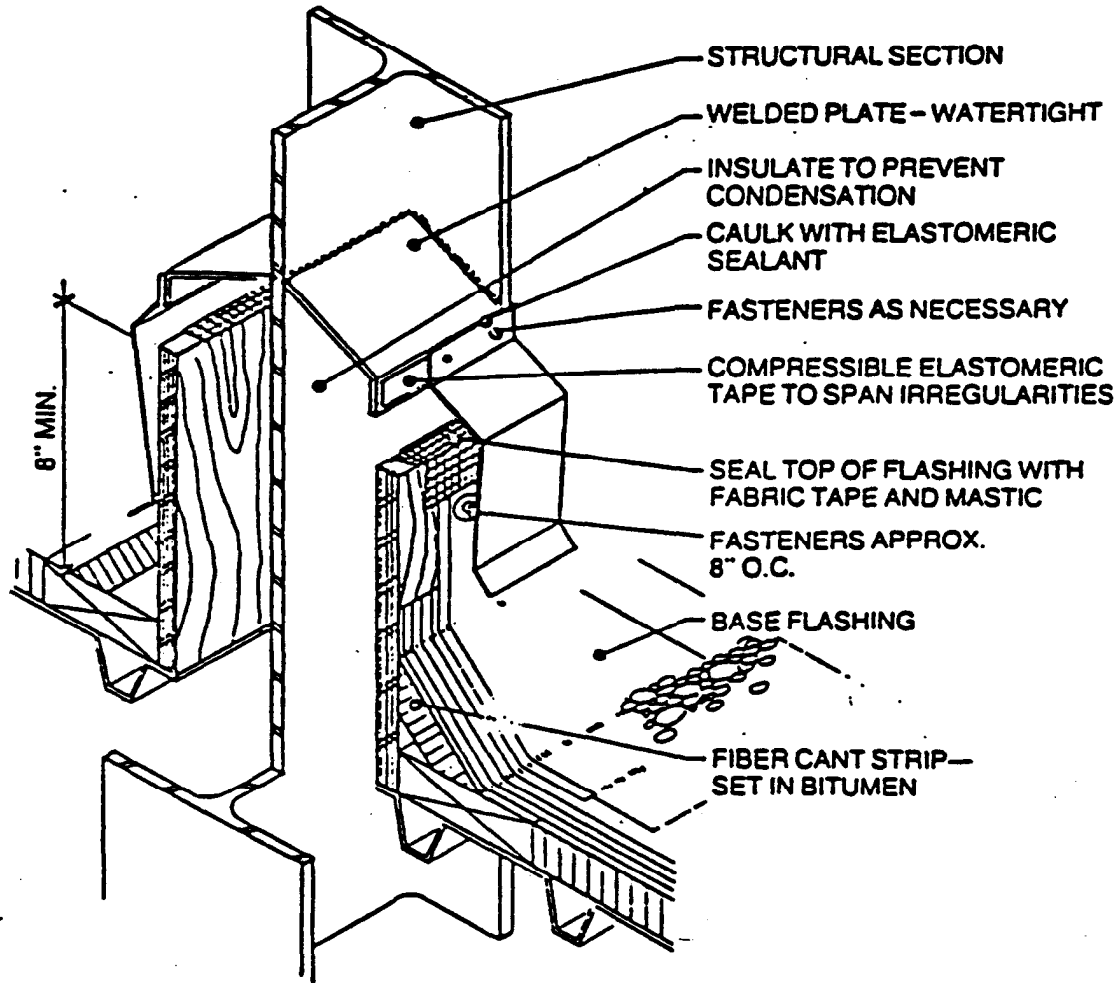
**NOTES:**

THIS DETAIL ALLOWS WALL AND DECK TO MOVE INDEPENDENTLY. THIS DETAIL SHOULD BE USED WHERE THERE IS ANY POSSIBILITY THAT DIFFERENTIAL MOVEMENT WILL OCCUR BETWEEN THE DECK AND A VERTICAL SURFACE. SUCH AS AT A PENTHOUSE WALL. THE VERTICAL WOOD MEMBER SHOULD BE FASTENED TO THE DECK ONLY. THIS IS ONE SATISFACTORY METHOD OF JOINING THE TWO PIECE FLASHING SYSTEM. OTHER METHODS MAY BE USED.



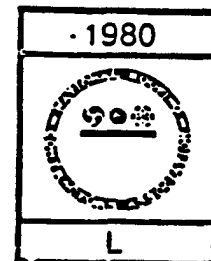


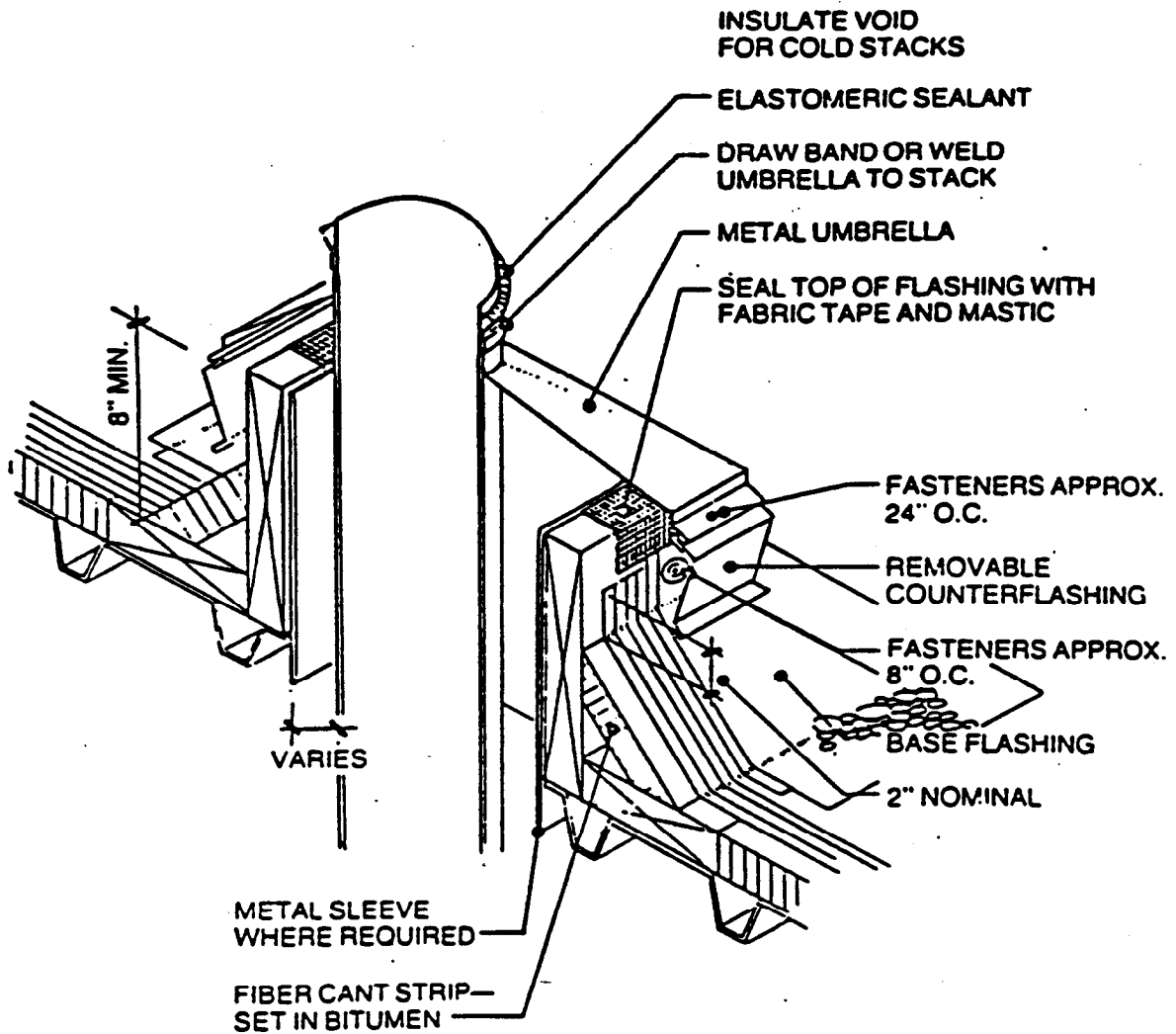
**FLASHING STRUCTURAL MEMBER THROUGH ROOF DECK**



**NOTE:**

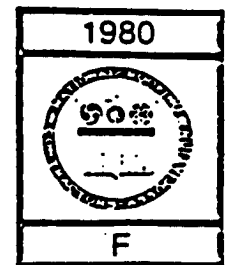
THIS DETAIL ILLUSTRATES ONE METHOD OF ELIMINATING PITCH POCKETS. THE CURBED SYSTEM ALLOWS FOR MOVEMENT IN THE STRUCTURAL MEMBER WITHOUT DISTURBING THE ROOF SYSTEM





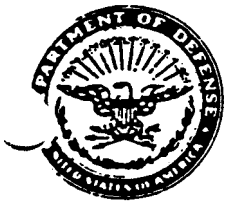
**NOTE:**

THIS DETAIL ALLOWS THE OPENING TO BE COMPLETED BEFORE THE STACK IS PLACED. THE METAL SLEEVE AND THE CLEARANCE NECESSARY WILL DEPEND ON THE TEMPERATURE OF THE MATERIAL HANDLED BY THE STACK.



## APPENDIX J: FIRE PROTECTION DESIGN GUIDANCE

1. PACNAVFACENGCOMINST 11320.9A of 13 MAR 1992, Fire Protection Design Analyses
2. NAVFACENGCOM Policy Letter DPL-88-0010 of 29 Nov 1988, Fire Protection in Elevator Hoistways
3. PACNAVFACENGCOM letter 11000 Ser 408/11143 of 31 Oct 1988, PACNAVFACENGCOM Fire Protection Engineering (Code 408) Branch Policies
4. PACNAVFACENGCOM Code 408 Memorandum of 10 Dec 1990, Fire Protection Equipment-Japan
5. OICC FE letter 11000 Ser 90/0248 of 19 Mar 1990, Guidance Letter on Acceptance of Japanese Manufactured Item for Fire Protection System
6. OICC FE letter 11000 Ser 400F/0247 of 16 Mar 1990, Fire Protection System Equipment and Material Guidance (Enclosures not included but are available from PDE, PWC Code 430 or OICC FE Code 04F)
7. COMNAVFACENGCOM Message R 261350Z MAR 91
8. Military Handbook (MIL-HDBK-) 1008B of 15 Jan 1994, Fire Protection for Facilities Engineering, Design and Construction
9. OICC Far East Code 04F Memorandum of 22 Apr 1993, New Fire Sprinkler and Hard Wired Detectors Requirements for Government Housing (Public Law 102-522)



DEPARTMENT OF THE NAVY  
PACIFIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
(MAKALAPA, HI)  
PEARL HARBOR, HAWAII 96860-7300

PACNAVFACENGCOMINST 11320.9A  
408

13 MAR 1992

PACNAVFACENGCOM INSTRUCTION 11320.9A

From: Commander, Pacific Division, Naval Facilities Engineering Command

Subj: FIRE PROTECTION DESIGN ANALYSES

Ref: (a) NAVFACINST 11320.23E  
(b) DODINST 6055.6  
(c) HIL-HDBK 1008A

Encl: (1) Fire Protection Design Analysis  
(2) Fire Protection Design Checklist

1. Purpose. To establish the requirement for preparation of an independent fire protection design analysis as an integral portion of the Basis of Design for each construction project.

2. Cancellation. PACNAVFACENGCOMINST 11320.9

3. Backaround. MIL-HDBK 1008A Fire Protection For Facilities requires that all concept and final design analyses and drawings address all provisions relating to fire protection. References (a) and (b) require the PACNAVFACENGCOM Fire Protection Engineering Branch (Code 408) to review all construction projects for conformance with current fire protection criteria during the design phase. Designer's approaches to fire protection engineering have been erratic. Some fire protection features have, in the past, been addressed in the design analyses of other disciplines (i.e., sprinklers in the mechanical analyses, fire alarms in the electrical analyses, and fire partitions in the architectural section), Many other fire protection items, however, have never been addressed in the Basis of Design. Providing a fire protection design analysis will establish a systematic approach to fire protection design and will facilitate fire protection review.

4. Design Guidance. Enclosures (1) and (2) will aid designers in considering the fire protection features or systems which may be required for each project. All items apply to Navy/Marine projects only unless otherwise stated. This list is as comprehensive as possible; however, it is general in nature and therefore may not include all requirements for every project. The checklist will serve to make designers aware of most major fire protection points to consider.

(R)



13 MAR 1992

FIRE PROTECTION DESIGN ANALYSIS

1. Construction and Interior Finish
2. Occupancy
3. Building Separation and Expire Protection
4. Fire Protection Criteria
5. Fire and Smoke Partitions; Fire Walls
6. Means of Egress
7. Extinguishing Systems
8. Water Supply
9. Smoke control Systems
10. Fire Alarm and Detection Systems
11. Fire Extinguisher Cabinets
12. Standpipes

Enclosure (1)



FIRE PROTECTION DESIGN ANALYSIS CHECKLIST

Reference Key

- (1) MIL-HDBK 1008A, Fire-Protection for Facilities (Mar 1988)
- (2) NFPA 101, Life Safety Code (1991)
- (3) Uniform Building Code (1988)
- (4) PACNAVFACENGCOM Code 408 Branch Policies (1991)
- (5) NFPA 13, Sprinkler Systems (1991)
- (6) NFPA 12, Carbon Dioxide Systems (1989)
- (7) NFPA 12A, Halon Extinguishing Systems (1989)
- (8) NFPA 96, Vapor Removal From Cooking Equipment (1991)
- (9) NFPA 11, Low Expansion Foam Systems (1988)

Reference

1. CONSTRUCTION AND INTERIOR FINISH

- Classify building construction as Type I, II, III, IV or V. (3), Chap. 17-22
- Is building type allowed for this occupancy? (3), Table 5-C
- Classify building occupancy as A, B, E, H, I, M, or R. (3), Table 5-A; Chap. 5-12
- Determine basic allowable floor area. (3), Table 5-C; Sec. 505
- Determine allowable area increases (separation sprinkler protection). (3), Sec. 506
- Determine maximum height. (3) Table 5-D; Sec. 507
- If building is of mixed occupancy, is required interior separation provided? (3), Table 5-B; Sec. 503
- Is building considered windowless? (1), Sec. 2.1.2.6
- Is roof covering allowed? (1), Sec. 2.8.1
- Is bar joist roof prohibited? Is roof deck assembly allowed? (1), Sec. 2.8.2
- Are smoke and heat vents needed? (1), Sec. 2.11.3
- Do interior finish materials comply with restrictions on plastics? (1), Sec. 2.6.2.1
- Is access provided for firefighting within building? (1), Sec. 2.10
- Is access provided for fire vehicles around building? See local Fire Department
- Is interior finish material in compliance (walls ceilings)? (1), Sec. 2.6

Enclosure (2)



5. FIRE AND SMOKE PARTITIONS. FIRE WALLS Reference (R)
- a. Fire Walls
- Four-hour fire walls must separate buildings into areas not-exceeding the maximum floor area allowed. (3), Secs. SOS and 506; Table S-C;
  - Is parapet required on fire wall? (1), Sec. 2.3.4
  - Are doors in fire walls three-hour self- or automatic-closing? NFPA 80, App. F-3
- b. Fire Partitions (R)
- Are all vertical stairs or shafts properly enclosed? (2), Sec. 5-2.2.6.1
  - Are hazardous areas properly enclosed? (2), Occupancy Chapter
  - Is corridor fire resistance rating required? (2), Sec. 5-1.3.4 and Occupancy Chapter
  - Are fire doors and/or windows of proper rating shown on door or window schedule and specified? (2), Sec. 6-2-3 and Occupancy Chapter
  - Are fire doors and windows in listed frames? NFPA 80
  - Is proper door hardware (self-closers, automatic closures, latches; etc.) specified? (2), Sec. 5-2.1 and Occupancy Chapter
  - Are heat-activated dampers provided in ducts passing through certain partitions where required? NFPA 90A, Chap. 3
- c. Smoke Partitions (R)
- Are smoke partitions required? (2), Occupancy Chapter
  - Doors, windows, and dampers protecting openings in smoke partitions must be self-closing or automatic by smoke detectors. (2), Sec. 6-3.
- d. General (R)
- Is the fire wall, fire or Smoke partitions complete? (Does it extend from floor slab to floor slab or does the ceiling have equal resistance?) (2), Sec. 6-2.2.2
  - Is the fire wall, fire or smoke partition clearly delineated on plans (shaded, cross-hatched, labeled)? Sec. 6.3.2

Enclosure (2)



7. EXTINGUISHING SYSTEMS

Reference

(R)

a. Sprinklers

- Are they required? (1), Sec. 6.1.3
- Is coverage 100%? (1), Sec. 6.1.4.2
- Determine sprinkler occupancy type (light, ordinary, extra, and group number). (1), Sec. 5.1.1
- Is system to be hydraulically calculated (protected area over 3000 SF)? (4), Sec. 2.2
- For hydraulic calcs, specify design density, remote design area, and hose stream allowance. Navy: (1), Table 10  
Air Force: (6), Para 2-2
- For pipe schedule systems (under 3000 SF), specify occupancy group as above and delete density, design area, and hose stream allowance. (1), Table 10
- If storage occupancy, indicate specific type of material stored, how it is packaged, how it is stored (i.e., piles, pallets, racks), and storage height. NFPA 231, 231C
- Are in-rack sprinklers required? NFPA 231C
- Are all sprinklers (including trash chutes, spray booths, etc.) under sprinkler spec? (4), Sec. 2.1.2
- Is riser detail provided showing Fire Department connection, alarms, drains, pressure gages, and other trim?
- Are underground feed main and riser at least 6" size? (4), Sec. 2.4.4
- Specify 212°F (intermediate-temperature) or higher sprinkler heads. NFGS-15501  
(4), Sec. 2.3.1
- Specify earthquake sway bracing., NFGS-15501  
(4), Sec. 2.4.1
- Specify automatic power shutdown in electronics equipment areas. NFPA 75  
(5), Sec. 2.7
- Is the Fire Department connection and water motor gong accessible to the fire department?
- Does the system activate the building alarm?
- If no alarm system, do the sprinklers send a signal directly to the Fire Department? (1), Sec. 6.1.4.3
- Are sprinkler and fire alarm specs coordinated (i.e., pressure switch under sprinkler section and wiring to alarm system under fire alarm section)?
- If the system is wet pipe, provide a post indicator control valve at least 40 feet from the building. Where this distance is not possible, locate PIV at blank masonry wall.

Enclosure (2)





- d. Foam Systems For Storage Tanks: Reference (R)
- Assume gasoline storage.
  - Determine application rate. (9), Para 3-2.5.1 or 3-2.6.6
  - Determine foam duration time. (9), Para 3-2.4
  - Determine number of supplemental hose streams. (9), Para 3-2.8.2
  - Calculate required foam quantity.
  - Calculate required water flow rate.
  - Determine number of foam makers. (9), Para 3-2.5.2 or 3-2.6.3
  - Push-button actuation is preferable (foam and water lines are brought to each tank where deluge valves allow foam and water to run through a proportioner and then to foam makers).
8. WATER SUPPLY (R)
- Provide adequate number of hydrants. (1), Sec. 5.8.3
  - Ensure hydrants and PIVs are at least 40 feet from buildings they protect. NFPA 24, Para 3-3.2 and 4-2.2
  - Provide adequate sectional valves in distribution system. (1), Sec. 5.8.2
  - Determine from flow test:
    - Static press.
    - Residual flow and press.
  - If sprinklers are required, obtain test data as early as possible.
  - Can available supply meet water demand?
  - If pressure is inadequate, provide booster pump.
  - If volume is inadequate, this may be solved by increasing supply line sizes, looping mains, and/or adding a water storage tank.
  - Fire pumps:
    - Must be diesel-powered unless installation complies with Chapter 6 of NFPA 20. (4), Sec. 5.1.1
    - Controllers must be listed. NFPA 20, Para 7-1.1.1 and 9-1.1.1
    - Flow meter required in addition to test header. (4), Sec. 5.2.1
    - Remote alarms if not in constantly attended location. (4), Sec. 5.2.4
    - Individual press sensing lines for each controller. (4), Sec. 5.3.2

Enclosure (2)

Reference

- Provide adequate zoning (each floor, each wing, concealed areas, separate systems, etc.).
- If concealed detectors or detectors in lockable rooms are not separately zoned, provide remote indicator lights in accessible areas such as corridors. (4), Sec. 1.4.4
- Provide a cross-sectional detail of underfloor detectors or plans. Detectors must be located at top of space. Preferable support arrangement is on a separate bracket independent of the sub-floor support system and located away from cracks between floor tiles. (4), Sec. 1.4.7.1
- Do not locate smoke detectors where subject to false alarms (closets, storage rooms, janitor's closets, laundries, electrical/mechanical rooms, toilets, kitchens, and unfinished concealed spaces). If detection in these rooms is needed, heat type is required. (4), Sec. 1.4.6.1
- Heat detectors shall be rate compensated type. (4), Sec. 1.4.5
- Where high air flows are present, smoke detectors shall be photoelectric type.
- Audible alarm devices shall be horns or electronic tones. Where other signals are existing and the system is being extended, new signal devices may match existing. (4), Sec. 1.9
- Door hold open devices must be provided on all fire or smoke doors expected to be propped open and must all activate at once throughout the building upon alarm condition. (4), Sec. 1.8
- Provide a schematic single line riser diagram showing all devices and connections to the Fire Department, extinguishing systems, air handlers, door closers, elevators, etc. (Do not show wire counts).
- Ensure all fire alarm devices are in the fire alarm spec. (i.e., duct detectors).
- If a graphic annunciator is not provided, mount a layout drawing of the building zones next to the annunciator.
- Fire alarm wiring shall be #16 copper minimum, solid. (4), Sec. 1.7.3
- Provide a general note saying that location of detectors is suggested and that final arrangement must be in accordance with all codes, manufacturer's recommendations, equipment listings, and other utilities. (4), Sec. 1.4.1



PACNAVFACENGCOM CODE 408  
BRANCH POLICIES

APPLICABILITY:

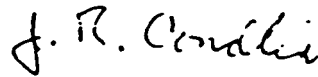
These policies are general guidelines which are to be followed in addition to all applicable codes (DOD, NAVFAC, NFPA, etc.). Deviations from these policies may be made when necessitated by special conditions or code criteria changes and only when approved by PACNAVFACENGCOM Code 408.

Supersedes: Edition signed 26 Oct 1988

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Approved by:



J. R. CONDLIN  
PACNAVFACENGCOM  
Code 408 Branch Manager

## SECTION 1. ALARM AND DETECTION SYSTEMS

1.1 WAREHOUSE FIRE ALARM SYSTEMS: In warehouses requiring sprinkler protection, fire alarm evacuation systems, including manual pull stations, are required. Warehouses 5,000 square feet and less do not require evacuation fire alarm systems. The sprinkler system's pressure/flow switch shall be connected to the base fire alarm reporting system.

1.2 HANDICAPPED FIRE ALARM SYSTEMS: Fire alarm systems in any structure accessible to handicapped persons, such as business, assembly, health care, or mercantile structures, shall be designed for the handicapped. Examples : Audiovisual alarm notification devices for deaf persons, manual pull stations at a suitable height for persons confined to wheelchairs (four-foot maximum height), etc.

1.3 PIGGYBACKING: Avoid piggybacking fire alarm systems.

1.4 DETECTORS:

1.4.1 Design/Contract Drawings: All design drawings for non CQC projects which show fire detectors shall include the following note:

"Devices are shown in suggested locations. Final quantity and layout shall be in accordance with all applicable codes, manufacturer's recommendations, specification section(s) \_\_\_\_\_ and equipment listings. Coordinate locations with lighting and air handling systems. Smoke detectors shall be located no closer than 3 feet from all supply air diffusers."

1.4.2 Detector Spacing: Spacing shall not exceed 25 feet apart or 12 1/2 feet from walls. When Detectors are under floor, above ceilings or cross zoned, they shall not be spaced greater than 15 feet apart or 7 1/2 feet from walls. If more restrictive requirements are found in equipment listing or in NFPA 72E (1990 edition), these requirements shall be followed.

1.4.3 Screw Terminals: Specify screw terminals for wiring connections for all detectors. Plug-in harness is acceptable.

1.4.4 Concealed Detectors: All concealed detectors (underfloor areas, attic spaces, duct detectors, blind spaces, etc.) shall either be remotely annunciated in an occupied location or zoned separately on the FACP.

1.4.5 Heat Detectors: All heat detectors shall be rate compensated type. Do not use or specify fixed temperature or rate of rise type heat detectors except for lounge smoke detectors (1.4.6.3) and for elevator shafts (2.11).

1.4.6 Smoke Detectors: All smoke detector circuits can be either two-wire or four-wire circuits.

1.4.6.1 Placement: Do not locate smoke detectors where they may be subject to false alarms (closets, storage rooms, janitor's closets, laundry rooms, toilets, kitchens, electrical and mechanical rooms, unfinished ceiling spaces or lobbies or vestibules adjacent to exterior doors).

1.4.6.2 Ventilation: In rooms where forced ventilation is present, locate smoke detectors no closer than three feet from all supply air diffusers. Locate detectors to favor the air flow toward return openings while still complying with Item 1.4.2 above.

1.4.6.3 Lounge Smoke Detectors: In lounge areas of BOQs and BEQs, the design shall include the installation of a single station 120 Vac smoke detector, plus a 135°F rated heat detector connected to the building fire alarm system.

1.4.6.4 Duct Smoke Detectors: Show duct smoke detectors on fire alarm riser diagrams. Specifications for duct detectors shall be in the fire alarm section and not in the mechanical sections. Shutdown of air handling units (AHU) upon alarm of duct smoke detectors shall be accomplished by the FACP. Provide supervised disconnect switches for each AHU shutdown circuit. On Navy projects, provide duct detectors as required by MIL-HDBK-100BA, Paragraph 2-11.2.3 (dated 31 March 1988). Air Force project, duct detection shall be in accordance with NFPA 90A (1989 edition). On contract drawings, provide typical details for location of duct detectors in air handling equipment.

1.4.6.5 Sleeping rooms shall include the installation of single station, 120 Vac smoke detectors.

#### 1.4.7 UNDERFLOOR DETECTORS:

1.4.7.1 Mounting Details: Where under floor detectors are to be installed, provide a typical mounting detail on the contract drawings showing proper mounting location at the top of the underfloor space.

1.4.7.2 Annunciation: Provide graphic annunciators for underfloor detectors. The annunciator shall depict a floor plan indicating device and zone locations. Zones shall also be indicated by word description. This does not apply to single-zone systems. All graphic annunciators shall be provided with a lamp test feature.

#### 1.5 FIRE ALARM CONTROL PANELS (FACP):

1.5.1 Placement: Locate the FACP just inside a main building entrance in a visible accessible location. Where annunciation is needed, this shall be located in the FACP. The intent of this is to allow fire departments to rapidly pinpoint activated alarm location. Remote annunciation may also be provided at designer's discretion. Consider recess mounting and interior color coordination.

1.5.2 Power Supply: The FACP power shall be taken from the line side of the main building cutoff unless it is fed by an emergency generator.

1.5.3 Standby Battery Power Supply: Standby battery power supply shall be capable of operating the entire system for 60 hours, and following this period, shall sound all alarm devices for a period of five minutes. Battery charger shall be capable of fully charging de-energized batteries in 48 hours. Battery capacity shall include a 15% overage factor to account for aging.

1.5.4 Modules: All modules in the FACP shall be placement supervised. When a module is removed, a trouble signal shall be indicated.

1.5.5 Lamp Test: All FACPs shall have a lamp test feature.

1.6 MANUAL STATIONS: Specify screw terminals for wiring connections for all manual station. Do not specify break-glass-front type stations or pull-lever, break-glass-rod type stations.

1.7 WIRING:

1.7.1 Layout of New Systems: All signal initiation and notification circuits shall be Class A supervised. The return loop (home run) for the wires to the FACP shall be in a separate conduit and stated so in either the specifications or on the plans. Fire alarm riser diagrams shall show return conduits. Contract drawings shall also show either a matrix diagram or logic diagram for operation of all system devices.

1.7.2 Adding to an Existing System: When adding to an existing Class B supervised system, Class B wiring may be used. Drawings shall indicate manufacturer, model no., voltage and wiring Class for all existing systems.

1.7.3 Conductors: Wiring for 24 Vdc fire alarm circuits shall be no smaller than No. 16 AWG single solid copper conductors per National Electric Code.

1.7.4 Electrical Conduit: Electrical conduit shall be rigid metal, IMT, or EMT. Do not use aluminum conduit. In hazardous areas, use rigid metal conduit only. The minimum size conduit shall be 3/4-inch in diameter.

1.7.5 Voltage: The wiring of 120 Vac and 24 Vdc circuits shall not be placed in the same conduit. Separate conduits shall be used for 120 Vac and 24 Vdc circuits.

1.8 DOOR HOLD-OPEN DEVICES: 120 Vac door hold open devices shall be provided when fire or smoke doors are expected to be propped open for convenience or as a necessity of building operation. Regardless of the hold open method, all hold open devices in the same building must release when any one hold open device is released in accordance with NFPA 101 (1991 edition). BOQs and BEQs two to five stories in height without elevators shall be provided with 120 Vac door hold open devices on all interior stairwell doors. When 120 Vac devices are used, the 120 Vac power wires shall be installed in separate conduit from the 24 Vdc conduit.

1.9 AUDIBLE ALARM DEVICES: Audible alarm devices shall be horns or electronic sound generators. Use approximately 3,000 feet square per audible alarm device in open areas. Visual alarm indicators shall be pulse or strobe type. Provide audiovisual alarms where occupancy is subject to higher than normal noise or for use by handicapped personnel.

1.10 SUBMITTALS: Contractor's submittal requirements in specifications shall include a layout plan of all fire alarm devices and conduit runs in addition to scaled shop drawings required by NAVFAC Guide Specification 16722. (Minimum size drawings that are acceptable is 1/8 scale.)

1.11 RADIO FIRE ALARM TRANSMITTERS AND/OR TRANSMITTER/INTERFACE PANEL: Where radio fire alarm transmitters are required, the designer shall provide a specification section for them. Careful consideration is necessary for placement of radio transmitters and antenna (obstructions, maximum height allowances, etc.). Place transmitters in accessible, visible, and well travelled exterior locations. Combination transmitter/interface panels can be used.

1.12 ELEVATORS: Smoke detectors and/or heat detectors for elevator machine rooms and hoistway areas shall be controlled by the building's 24 Vdc FACP.

## SECTION 2. SPRINKLER SYSTEMS

### 2.1 DESIGN OF SPRINKLER SYSTEMS:

2.1.1 Navy and Air Force Projects: Design criteria differs between Navy and Air Force projects. Navy requirements for occupancy classification, design density, remote area and hose stream allowances are specified in MIL-HDBK-1008A (dated 31 March 1988). Air Force requirements are contained in AFR 88-15.

2.1.2 Sprinkler Coverage: Sprinkler protection for all areas of the building shall be included under the sprinkler specification section. Sprinkler protection for freezers, coolers and covered loading docks shall be specifically called for in the contract plans and specifications. Do not specify sprinklers coverage under separate specifications sections for special areas, such as trash chutes, paint spray booths, elevators, etc.

2.2 HYDRAULIC ANALYSIS: The A-E shall conduct water flow tests at the proposed site and include pertinent test data in the 35% design package. The A-E is also responsible for determining if the water supply is adequate to meet sprinkler and hose stream demands. For hydraulic calculations, deduct the hose stream requirement at the point of connection to the existing distribution system or the closest fire hydrant, whichever is closer to the sprinkler riser. If these demands cannot be met, the A-E shall provide proper solutions to the problem of an insufficient water supply, i.e., fire pump(s), and/or water storage tank(s). It is imperative that possible problems and solutions be identified as early possible. See Page VI-1 of Attachment C of Appendix N for required format of water supply data. Provide reference points on drawings to show where water supply data is given. All systems over 3,000 square feet shall be hydraulically calculated.

### 2.3 SPRINKLER HEADS

2.3.1 Temperature Rating: Use intermediate temperature rated (212°F) sprinklers wherever NFPA 13 (1991 edition) requires ordinary (165°F) temperature rating. Use high temperature rated (286°F) sprinklers at ceiling/roof level of warehouse occupancies for storage heights under 25 feet high.

2.3.2 On-off Intermittent Sprinkler Heads: Do not use or specify "on-off" intermittent sprinkler heads.

2.3.3 BRIG Facilities: Use tamper proof sprinklers in all detention and correctional facilities.

2.3.4 Piers and Wharfs: Sprinkler heads below a combustible pier or wharf shall be pendant sprinkler heads installed in the upright position. All sprinkler heads shall be of the corrosion resistant type.

2.3.5 Child Development Center: Sprinkler heads in areas occupied by children shall be quick-response with 165°F temperature rating.



## 2.4 SPRINKLER PIPING:

2.4.1 Earthquake Sway Bracing: Earthquake sway bracing shall be installed on all sprinkler systems in accordance with NFPA 13.

2.4.2 Interior Sprinkler Piping Layout: For non CQC projects, interior sprinkler piping layout shall be done by the contractor based on a performance specifications. Contract drawings shall show underground feed main and sprinkler riser, but not the interior piping and sprinkler heads.

2.4.2.1 Interior Sprinkler Piping Layout (Philippines, Okinawa and Japan): Piping layout(s) shall be shown on contract drawings per Item 7.10.

2.4.3 Above Ground Piping: Do not use plastic pipe or thin wall steel pipe less than Schedule 40 for above ground sprinkler piping.

2.4.4 Underground Feed Mains: Underground sprinkler feed mains shall be no smaller than six inches in size.

## 2.5 SPRINKLER RISER:

2.5.1 Location: The preferable location for all sprinkler risers is inside the building. If the sprinkler riser is located outside, a protective shelter shall be built around it. Provide guard posts for existing sprinkler risers located in open industrial or warehouse areas.

2.5.2 Anchor Rods: Provide anchor rods at the base of each sprinkler riser according to Figure A-8-6.2(1) of NFPA 24 (1987 edition). Show these rods on riser details on contract drawings.

2.5.3 Control Valves: Each sprinkler riser shall be controlled by either a Post Indication Valve (PIV) or an OS&Y gate valve, but not both. Pre-action and deluge systems shall have an OS&Y gate valve.

2.5.3.1 Supervision of Control Valves: All valves controlling sprinkler systems shall be supervised by one of the methods outlined in NFPA 13 (1991 edition). Plans or specifications shall indicate the type of supervision desired.

## 2.6 PRE-ACTION SYSTEM SPRINKLER SYSTEMS:

2.6.1 Pre-Action Piping Supervision: For pre-action systems, use either plant air or tank-mounted air compressor(s). Specify a low air pressure switch for transmitting a low air signal to the FACP.

2.6.2 Pre-Action Deluge Valve Actuating Circuit: The pre-action deluge valve actuating circuit shall be Class A or solenoid coil supervised.

2.7 SPRINKLERS IN ELECTRONIC AREAS: Where sprinklers are located in electronic areas, electronics power must automatically shut down prior to water flow. Pre-action valves shall be operated by cross-zoned smoke detectors. Pre-action sprinkler heads installed in the pendant position shall be the dry pendant type.

2.8 CLUBS: All clubs shall have sprinkler protection regardless of construction.

2.9 PRESSURE RELIEF VALVES: A pressure relief valve shall be installed for gridded wet pipe systems to prevent build-up of excess pressure due to thermal heating. Specify relief valve size to be a minimum of 3/4-inch. Show relief valve on riser diagram located at the upper pressure gauge and piped to the outside.

2.10 WAREHOUSES: For warehouses, A-E shall design sprinkler protection in accordance with MIL-HDBK-1032/2 (dtd 30 Sep 1987), NFPA 231 (1990 edition) and 231C (1991 edition), as applicable. Storage heights shall be based on maximum available storage height when the minimum required clear space below sprinklers is maintained. Where rack storage will be provided, show rack configurations, shelving details, aisle width, etc. (plan view, elevation and details) on contract drawings. Indicate materials stored in the design. If solid shelving, sprinklers are required beneath each tier.

2.11 SPRINKLER HEADS FOR ELEVATOR SHAFTS: Provide sprinkler protection in accordance with DPL-91-0003, Fire Protection in Elevator Hoistways and NFPA 13. (NOTE : Consult with PACNAVFACENCOM Code 408 for specific details.)

2.12 COLD STORAGE WAREHOUSES: Provide pre-action sprinkler protection at roof level and for in-rack sprinklers (where required by NFPA 231C).

SECTION 3. CARBON DIOXIDE SYSTEMS

3.1 SEQUENCE OF OPERATION: Where total room and/or underfloor flooding systems are automatically actuated by cross-zoned smoke detectors, the sequence shall be as follows (NOTE: Total room flooding systems are not permitted without written approval of PACNAVFACENGCOM Code 408):

- a. Upon actuation of the first detector (pre-alarm model):
  - (1) A pre-discharge alarm (distinct from building general alarm) shall sound in the protected area.
  - (2) An alarm signal shall be transmitted to the Fire Department unless otherwise authorized by PACNAVFACENGCOM Code 408.
- b. Upon actuation of the second detector (discharge mode):
  - (1) Air handling equipment serving the protected area(s) shall shut down.
  - (2) All door closets and any required dampers to the protected area shall close.
  - (3) A red revolving light in the protected area must activate (not required if only underfloor flooding is being provided).
  - (4) A general building alarm shall sound.
  - (5) A time delay relay (set at a minimum 20 seconds) shall start, at the end of the time delay the following shall occur:
    - (a) Discharge will occur in the protected area or zone where the alarm was initiated.
    - (b) Technical power in the affected area of zone shall shut down.

Note: Designer must consider if the particular technical equipment requires a phased shutdown.

- (c) A visual indicator (i.e., sign with lit face or flashing light above) outside the entrances to the area of zone must activate, indicating that re-entry is prohibited (not required of only underfloor flooding is provided).

(d) An alarm signal shall be transmitted to the FACP to charge the pre-action sprinkler system in the protected area.

- c. Upon actuation of a manual station, all functions under a and b above shall occur, including the time delayed discharge. Manual release station shall be dual action type.
- d. A pressure switch shall be connected to the FACP to sound a building general alarm but shall not initiate discharge sequence nor shut down any equipment.
- e. On Air Force projects only, an abort switch shall be provided and shall be located within the protected area. No abort switch will be included in Navy projects unless specifically directed by PACNAVFACENCOM Code 408.

3.2 CO<sub>2</sub> SYSTEMS: CO<sub>2</sub> systems are not substitutes for required sprinkler protection in accordance with DOD criteria.

3.3 SUPPLY OF CO<sub>2</sub>:

3.3.1 Reserve Supply of CO<sub>2</sub>: Provide an in-place complete reserve supply of CO<sub>2</sub> for each system. On Navy projects, this reserve supply shall be connected through a main/reserve transfer switch. On Air Force projects, the reserve supply need not be connected.

3.3.2 CO<sub>2</sub> Supply: Locate CO<sub>2</sub> supply cylinders outside of, but adjacent to or as close as possible to the area(s) being protected. All CO<sub>2</sub> cylinders shall be the standard 75 lbs. size.

3.4 MANUAL STATIONS: All manual stations shall be distinct (i.e., signs, color and action) from manual building fire alarm stations and stations for other extinguishing systems.

3.5 CO<sub>2</sub> HOSE REELS: No new CO<sub>2</sub> hose reels shall be installed in any building. Existing CO<sub>2</sub> hose reels shall be removed when remodeling.

3.6 SYSTEM PIPING:

3.6.1 Cleaning Pipes: Before final testing, swab with alcohol all system pipes to remove all oil within the pipes. Include this in the specification.

3.6.2 CO<sub>2</sub> Piping Pressure Test: Specify 1000 psi pressure test for CO<sub>2</sub> piping. No more than 150 psi shall be lost in 2 minutes. Include this in the specification.

3.7 CONTROL PANELS: Control panels for CO<sub>2</sub> systems shall be equipped with separate alarm silence switches for pre-alarm and discharge alarm circuits.

3.8 ACTUATING CIRCUIT: The CO<sub>2</sub> system actuating circuit shall be Class A or solenoid coil supervised.

3.9 SEALING OF THE AREA: Cable penetrations and trenches shall be sealed. The designer shall provide an approved system for sealing openings, i.e., show a sealing system detail on the contract drawings.

3.10 GENERATORS : When generators are protected by gaseous extinguishing agents, the designers shall consider wind down time of the generator.

3.11 DRAINS : Where floor drains are provided, they are to be deep trapped type to prevent leakage of the gas. Drains shall be provided for all Air Force projects.

3.12 PARTITIONS: Show details of partitions extending down into under floor areas.

SECTION 4. DRY AND WET CHEMICAL EXTINGUISHING SYSTEMS

4.1 MANUAL AND AUTOMATIC DRY CHEMICAL SYSTEMS: All open griddles, deep fat fryers, charbroilers, plenums and ducts shall be protected with automatic dry or wet chemical system(s). The protection for plenum and duct may be deleted if an approved grease extractor is provided in the hood.

4.2 SYSTEMS: All systems shall be arranged to sound the building fire alarm system (where existing) and shut down power (gas and/or electric sources) to protected appliances under the protected hood. When a building does not have an alarm system, the dry chemical system must alert the fire department directly (where an exterior alarm reporting system exists). When approved wet type grease extractors are provided, these systems shall be arranged to automatically activate upon the dry or wet chemical system discharge.

4.3 SODIUM BICARBONATE TYPE DRY CHEMICAL: Use only sodium bicarbonate type dry chemical where cooking appliances are protected.

4.4 FINAL ACCEPTANCE TEST : Final acceptance test must use substitute gas in accordance with NFPA 17 (1990 edition).

4.5 MANUAL STATIONS : All manual stations shall be distinct (i.e., signs, different color) from any building manual alarm stations and stations for other extinguishing systems. Locate the manual station in the path of egress from the hazard.

4.6 DRY CHEMICAL SYSTEMS: The designer shall provide a separate specification section for dry chemical systems.

4.7 WET CHEMICAL SYSTEMS: Approved wet chemical systems may be used in lieu of dry chemical systems.

## SECTION 5. FIRE PUMPS

### 5.1 DIESEL ENGINE DRIVEN FIRE PUMPS:

5.1.1 Diesel Fire Pumps: All pumps shall be diesel driven pumps unless the installation can comply with Chapter 6 of NFPA 20 (1990 edition).

5.1.2 Fire Pump Rotation: Pump rotation for diesel engine driven fire pump shall be clockwise.

### 5.2 FIRE PUMP DESIGN:

5.2.1 Pump Installation: All pump installations shall include a flow meter in addition to a test header. The flow meter shall not discharge into the suction feed main supplying the fire pump. An approved butterfly valve shall be installed downstream of the flow meter.

5.2.2 Separate Bypass: All fire pumps taking suction from street mains shall be equipped with a separate bypass.

5.2.3 Isometric Piping Details: All contract drawings shall contain an isometric piping details of each fire pump installation.

5.2.4 Remote Alarms: All pump installations shall have remote alarms in a constantly occupied location.

5.2.5 Relief and Flow Test Piping: Fire pumps supplied from a suction tank shall have pressure relief and flow test discharge outlets piped back to the top of the suction tank away from the suction vortex plate.

### 5.3 FIRE PUMP CONTROLLERS:

5.3.1 Primary Resistors: Primary resistors on electric fire pump controllers shall be enclosed in a cabinet separate from the rest of the controller components. All electric fire pump controllers shall be primary resistor type reduced voltage starting controllers.

5.3.2 Pressure Sensing Lines: Each pump controller shall have individual pressure sensing lines taken from the system side of the pump.

5.4 SALT WATER FIRE PUMPS: All salt water fire pumps shall have special metallurgy or coating systems in accordance with manufacturer's recommendations.

### 5.5 FIRE PUMP LOCATIONS:

5.5.1 Lighting of Pump Rooms: Provide emergency lighting in fire pump rooms.

5.5.2 Drains in Fire Pump Rooms: Fire pump rooms shall be provided with adequate floor drains and a drainage system to the exterior of the building. Circulation relief valves shall be piped to the outside of the building. All test outlets to discharge safely outside of the building.

5.5.3 Fire Pump Houses: All fire pump houses shall be constructed of noncombustible construction. Diesel driven pump houses shall be sprinklered.

5.6 DUAL DRIVEN FIRE PUMPS: No dual driven fire pumps shall be used.

5.7 SALTWATER SYSTEMS: Saltwater systems shall be installed for ships in cold iron. In other locations consider salt water system on a case-by-case basis (per NAVFAC).

5.8 AUTOMATICALLY ACTUATED FIRE PUMPS: All fire pumps shall be automatically actuated via pressure drop and manually started at the fire pump controller. Remote automatic redundant start shall be provided for aircraft hangars. All fire pumps shall be manually stopped, ie., automatic stop or manual remote stop is prohibited.



## SECTION 6. FOAM EXTINGUISHING SYSTEMS

6.1 FOAM EXTINGUISHING PUMPS: Foam extinguishing pumps shall be designed in accordance with NFPA 20 (1990 edition).

6.2 SOLENOID OPERATED VALVES: All solenoid operated valves shall be equipped with manual release or manual bypass.

6.3 ORIFICE PLATES: Orifice plates installed in pipelines for purposes of reducing pressure are prohibited. Orifice plates used for proportioning foam concentrate and water are allowed.

6.4 FOAM WATER DELUGE (OPEN-HEAD) SYSTEMS: On Navy projects, primary aircraft hangar protection shall be foam water deluge (open-head) systems at roof level and floor level foam water monitor nozzles.

6.5 CLOSED-HEAD FOAM WATER SPRINKLER SYSTEMS: Closed-head foam water sprinkler systems shall be pre-action type (i.e., for flammable liquid warehouse, hazardous waste storage, etc.).

6.6 POL ABOVEGROUND STORAGE TANKS: Foam extinguishing systems for POL above ground storage tanks can be either "over-the-top" application using foam chambers or subsurface injection per NFPA 11 (1988 edition).

6.7 FOAM PIPING MATERIALS: Foam piping materials to be compatible with agent for long term use.

6.8 ELECTRIC EQUIPMENT IN HANGARS: Electric equipment beneath sprinkler systems in hangars shall be weatherproof.

6.9 NEW FOAM WATER SYSTEMS: All new foam water systems shall use 3X concentration.

6.10 BLADDER TANKS: Bladder tanks can be used in foam systems on a case-by-case basis subject to approval of PACNAVFACENGCOM Code 408. Use foam pumps and atmospheric tanks for most projects.

## SECTION 7. MISCELLANEOUS

7.1 EXIT SIGNS: Exit signs shall be self-illuminated and have self contained battery backup power.

7.2 EXPOSED INSULATION: Exposed insulation in concealed spaces of sprinklered buildings shall be specified to have a flame spread of 25 or less and a smoke developed rating of 50 or less (including paper covering). This is to prevent the space from being defined as combustibile concealed space which would require sprinkler protection in accordance with NFPA 13 (1991 edition). Acceptable type of insulation blankets per Federal Spec HH-521F are Type I, Type II (Class A only), and Type III (Class III only). Any insulation conforming to Federal Spec HHI-558B is acceptable for this application.

7.3 FIRE DOORS: Fire doors shall be installed-in listed or approved door frames. Wired glass shall be installed in steel frames. Aluminum or wood frames are prohibited.

7.4 CARPET: Carpet shall not be used as interior wall finish.

7.5 STANDPIPES: All standpipes shall be Class I. No hose shall be installed.

7.6 VERTICAL STANDPIPE INSTALLATIONS: Vertical standpipe installations shall be concurrent with individual floor construction, such that, they may be used during an emergency during construction.

7.7 HIGH RACK STORAGE: Rack storage requiring in-rack sprinkler protection (refer to NFPA 231C) shall be so designed as to allow in-rack piping to be installed in longitudinal and/or transverse flue without being damaged by pallet loads of materials. The mechanical rack design shall allow a longitudinal flue space of approximately 12 inches.

7.8 CQC CONSTRUCTION PROJECTS: Fire protection submittals for CQC projects shall be reviewed by a U.S. registered fire protection engineer employed by the independent third party CQC firm. Final acceptance tests of installed fire protection systems on a CQC project shall be witnessed by PACNAVFACENGCOM Code 408 who will be responsible for recommending acceptance or non-acceptance of the systems to the Contracting Officer. Design specifications shall include the above requirements for all CQC projects.

7.9 NON CQC CONSTRUCTION PROJECTS: PACNAVFACENGCOM Code 408 shall review and approve contractor submitted fire protection system shop drawings, catalog cuts, supporting calculations, etc. PACNAVFACENGCOM Code 408 shall witness final acceptance tests of installed systems and will be responsible for recommending acceptance or non-acceptance to the Contracting Officer. These provisions already exist in standard NAVFAC Guide Specifications.

7.10 PHILIPPINES, OKINAWA AND JAPAN: The design A-E shall prepare "shop drawing level" fire protection system drawings as an integral part of the contract documents, i.e., performance plans/specifications are not to be used. The design A-E team shall use the services of a U.S. registered fire protection engineer to design and prepare "shop drawing level" plans/specifications. The design package shall be reviewed by PACNAVFACENGCOM Code 408 prior to release for bidding. No shop drawing reviews will be required during construction as long as the Contracting Officer does not permit the construction contractor to deviate from the A-E's original design. If any significant construction field changes occur, then shop drawings, catalog cuts and supporting calculations will be forwarded to PACNAVFACENGCOM Code 408 for review and approval.

7.11 HAZARDOUS MATERIAL STORAGE: The designer shall consult with PACNAVFACENGCOM Code 408 for technical input as early in the design phase as possible. Fire protection criteria in this area is subject to constant change.

I  
SPECIFICATION  
GUIDELINE DATA  
MANUAL FIRE ALARM EVACUATION SYSTEMS

(Refer to NAVFAC Guide Specification NFCS-16722 for further details)

GENERAL DESCRIPTION: A manual fire alarm evacuation system consists of a method for alerting occupants of a building in the event of fire or other emergency. Operation of a manual fire-alarm system is accomplished by manually actuating a fire alarm pull station which in turn automatically activates an alarm system of horns throughout the building. Where station exterior fire alarm systems exist or where it is feasible, the alarm is also automatically transmitted to fire alarm headquarters. Pull stations and horns are normally located at points of egress from building.

CRITERIA: From a life safety standpoint, manual fire alarm evacuation systems are basic requirements in the majority of occupancies regardless of building construction features. The most essential of these occupancies includes living quarters (barracks, etc.), clubs, hospitals, brigs, administrative buildings, schools, and other types of buildings involving 50 or more persons.

GENERAL:

1. The contractor shall furnish and install a complete manual fire alarm evacuation system, as specified herein; complete and ready for standard operation in areas indicated on the drawings.

2. The system shall include a central control panel, power supply signal initiating devices. (manual pull stations), audible horns and visual alerting devices, a conduit and wiring system, and all auxiliary and accessory devices required to provide a complete operating system.

3. The system shall comply with the-applicable provisions of the National Fire Protection Association Standards, Numbers 70, 71, 72A, 72B, 72C, and 72D, latest editions. The provisions of these Standards, unless otherwise specified, shall be followed in total, whether the stipulations listed therein are directed or recommended. All equipment and devices shall be listed by the Underwriters' Laboratories, Inc., or approved by the Factory Mutual Laboratories.

DRAWINGS AND DATA REQUIRED OF THE CONTRACTOR: Prior to fabrication and/or installation, detailed working drawings shall be submitted to the Contracting Officer for review and approval by the CQC representative, The contract drawings shall show only locations of equipment and power supply- Final design shall be determined by the contractor. Typical installation wiring and instructions from catalogs will not be acceptable as working drawings. In addition, the following are required:

1. Schematic wiring diagrams showing terminal blocks, wiring numbers, spares, ends of runs, wire size, conduit designation and site.
2. Catalog cuts showing all equipment to be installed.
3. Installation drawings showing plot plan layout and location of proposed equipment.

CONTROL:

1. The fire alarm control panel shall contain all equipment housed in one cabinet including annunciation, trouble signals, relays, etc., and shall detect the operation of any signal initiating device, indicate by annunciator lamps, individual circuit trouble alarm and individual circuit fire alarm. A separate annunciator panel will be acceptable.
2. A pilot lamp shall normally be on, indicating that the system is operating from the main power supply. A failure of the main power supply shall cause the lamp to go out.
3. A trouble lamp and trouble buzzer, operating together, shall signal any trouble condition. Failure of main operating power, disarrangement in system wiring or alarm condition shall cause the trouble lamp to come on and the trouble buzzer to sound. A silencing switch shall be provided to silence the trouble buzzer and shall be so arranged that the trouble lamp will be on at all times that this switch is in an off-normal position. Restoration of the system to normal shall cause the trouble buzzer to resound until the silencing switch is returned to its normal position.
4. All alarm signals shall sound continuously and be automatically locked-in at the control panel until the operated device is returned to its normal condition, and the panel is manually reset. A switch shall be provided on the control panel for silencing the alerting devices. The manual reset switch and the alarm silencing switch shall be of the self-restoring type which cannot be left in an abnormal position.  
Note: Some occupancies such as hospitals require coded systems.
5. The control panel shall provide for annunciation with signal initiating circuits zoned or numbered as required. Each circuit for trouble and alarm shall be represented by separate alarm lamps. The lamp for each circuit shall be identified by a lettered nameplate showing the circuit number and/or zone designation. The trouble and alerting devices shall function as hereinbefore specified.
6. The control panel shall include the necessary switches, relays, indicator lamps, wiring terminals, etc., to provide complete operating, supervising, control and testing facilities for the entire system. All relays shall be of the sealed plug-in-type.

7. Terminals and other necessary facilities shall be provided in the control panel to permit transmission of alarm signals to the station fire alarm headquarters. All wiring and equipment necessary to connect to the station fire alarm system shall be installed by the contractor.

POWER SUPPLY:

1. The manual fire alarm system main power supply shall operate from 120 volt or 220 volt A.C. obtained from the building service on the line side of the main service panel unless otherwise directed. Where an emergency power supply is available separate from the main building supply, this emergency supply should be used as a secondary supply for the alarm system. This connection shall be made in conduit or cable in accordance with local and national codes. Separate overcurrent protection shall be provided and marked "FIRE ALARM." A circuit disconnecting means shall be so installed that it will be accessible only by authorized personnel. A three wire feed shall be provided with one wire used only for the trouble circuit.

2. The main A.C. power shall be converted to low voltage 12 or 24 direct current for system operation. Transformer, rectifier, fuses and other power supply components shall be incorporated in the fire alarm control panel or contained in a separate panel if approved for the application.

3. Batteries shall be provided as a source of supply for operating the audible and visual trouble signals and as an emergency source of supply for operating the fire alarm system in the event of an interruption in the main power. Batteries are normally required where the interruption of the main power supply occurs frequently or under special circumstances. A changeover relay, in the fire alarm control panel, shall automatically transfer to the battery upon failure of the main power. Restoration of main power shall automatically disconnect the battery and reconnect the main power supply. There shall be no drain on the emergency battery except during an interruption of main power. Batteries shall be of the maintenance free type.

SIGNAL INITIATING DEVICES:

1. Manual fire alarm stations shall be non-coded, non-break glass, pull type, equipped with a lock or other approved means so that they may be test operated and designed so that after actual operation they cannot be restored to normal except by turning the lock. Manual stations shall be installed not less than four and one-half feet nor more than six feet above floor level. Manual stations shall be located as shown on the drawings. Note: Coded stations are required in certain occupancies such as hospitals.

ALERTING DEVICES:

1. Evacuation signals shall be resonating horns or audio-visual devices with no less than 90 db at 10 feet and shall be located as shown on the drawings. Horns shall be located so fire alarm is audible over all background noise throughout all areas of a building.

WIRING:

1. All Wiring shall be in accordance with the National Electrical Code and National Fire Protection Association Standards Nos. 71, 72A, 72B, 72C, and 72D, latest editions.

TESTING, GUARANTEE AND SERVICE:

1. A representative of the manufacturer shall supervise the final testing of the system. Final testing shall be witnessed by the PACNAVFACENCOM Fire Protection Engineer who will recommend the system for acceptance or nonacceptance to the Contracting Officer. On completion of the acceptance tests, instructions shall be given in the operation and testing of the system.

2. The fire alarm system shall be free from defects in workmanship and materials, under normal use and service, for a period of one year from the date of acceptance. Any equipment proved to be defective la workmanship or material shall be repaired, replaced, or adjusted free of charge.

II  
SPECIFICATION  
GUIDELINE DATA  
AUTOMATIC FIRE ALARM SYSTEMS

(Refer to NAVFAC Guide Specification NFGS-16722 for further details)

GENERAL DESCRIPTION: Automatic fire alarm systems are designed to automatically detect and sound an alarm due to fire, heat or smoke and consist of a system of detectors spaced according to definite criteria limiting the area of coverage for each detector. Detectors are available in a variety of temperature ratings to guard against false alarms from premature operation in areas where normal ceiling temperatures are unduly high in varying degrees. Manual fire alarm systems are extensions of and form an integral part of automatic fire alarm systems. Therefore, it is generally only necessary to insert a paragraph in the manual fire alarm specification outlining the requirement for automatic fire detectors. where conditions permit, an alarm is also automatically transmitted to fire alarm headquarters. Automatic fire alarm systems utilize the following two general types of detectors:

a. Rate compensation heat detectors.

b. Smoke detectors: Actuation is caused by detection of abnormal visible smoke densities using the photo-electric beam interruption or light reflection and refraction principle, or ionization type.

CRITERIA: Smoke detectors are generally installed in computer facilities, child development centers, UOPHS, URPHS, dormitories, hospitals, elevator lobby areas, in the machine room(s)- associated with elevator hoistways, and in air conditioning/air handling system at specific cfm levels. In Air Force projects where automatic sprinkler protection is not provided smoke detection and/or heat detection systems are required.

NOTE: During design review stage(s), the PACVAVFACENGCOM Fire Protection Engineer shall determine the type of installation and the extent of automatic fire alarm system installations to insure that proper equipment is being utilized and installation is proper for the occupancies encountered.



CRITERIA: Insert the following applicable paragraph under "Signal initiating Devices" in the specification guideline data for manual fire alarm evacuation systems:

1. In addition to the manual fire alarm system, the contractor shall install automatic fire detectors compatible for operation with the manual fire alarm system in areas indicated of the fixed temperature and rate-of-rise/rate anticipation type automatically arranged to sound the evacuation alarm. Fixed temperature degree rating shall be determined by the PACNAVFACENGCOM Fire Protection Engineer. Spacing of the detectors shall be in accordance with the U.L. listing for the fixed temperature rating. In no case shall the coverage exceed the fixed temperature rating of 1/2 of the rate-of-rise rating. Based on ceiling construction, reduced spacing of detectors may be required to insure adequate coverage.

2. In addition to the manual fire alarm system, the Contractor shall install smoke detectors arranged to sound the evacuation alarm and shut down air handling systems and operational equipment upon detection of abnormal smoke density. Smoke detectors shall be compatible and form an integral part of the manual fire alarm evacuation system.

Insert the following applicable paragraph under "Power Supply" in the specification guideline data for manual fire alarm evacuation systems:

1. Detectors of the rate compensation type shall have electrical characteristics suitable for compatible operation with the manual fire alarm system.

2. Manual fire alarm systems used in conjunction with smoke detectors shall have compatible electrical design to form an integral part of the detection system.

DRAWINGS AND DATA REQUIRED OF THE CONTRACTOR: Prior to fabrication and/or installation, detailed working drawings shall be submitted to the Contracting Officer for review and approval by the CQC representative. The contract drawings show only locations of equipment and power supply. Final design shall be determined by the contractor. Typical installation wiring and instructions from catalogs will not be acceptable as working drawings. In addition, the following are required:

1. Schematic wiring diagrams showing terminal blocks, wiring numbers, spares, ends of runs, wire size, conduit designation and size.

2. Catalog cuts showing all equipment to be installed.

3. Installation drawings showing layout and location of proposed equipment.

III  
SPECIFICATION  
GUIDELINE DATA  
PRE-ACTION AND DELUGE SPRINKLER SYSTEMS

(Refer to NAVFAC Guide Specification NFCS-15503 for further information in developing detailed specifications.)

GENERAL DESCRIPTION: A pre-action sprinkler system uses closed sprinkler heads arranged as in a wet or dry-pipe system. A heat-responsive system installed throughout the protected area operates an automatic water-control valve upon detection of fire which admits water to the piping ready to discharge through the sprinklers when their fusible elements are released. There is normally no water in the piping of a pre-action sprinkler system which is a preferred arrangement when an alarm in advance of sprinkler operation is desirable and where it is desirable to minimize water damage due to premature operation or mechanical damage to the sprinkler system. Pre-action sprinkler systems are used in high valued computer or communication facilities, and in cold storage facilities at the roof level and in racks.

A deluge system uses open sprinklers where it is desirable to deliver water through all sprinklers simultaneously and wet down the entire area protected. Water is held back from the sprinkler system by a control valve which is released by a heat-responsive system installed throughout the sprinklered area. Deluge systems are commonly installed in airplane hangars and other hazards needing immediate application of large quantities of water.

NOTE: The guideline data for a pre-action or deluge sprinkler system is identical except that in the case of pre-action sprinkler systems the sprinkler piping is supervised with air pressure to detect faulty sprinkler or piping conditions and sprinkler heads are of the closed type.

REQUIREMENT: The PACNAVFACENGCOCM Fire Protection Engineer will determine the requirement for pre-action or deluge type sprinkler systems based on type of construction, occupancy encountered, and other factors during design review stage(s).

GENERAL: The work includes complete design, the furnishing of all materials, equipment, and labor for the installation of a (pre-action) (deluge) sprinkler system, complete and ready for standard operation in areas indicated.

SPECIFIC REQUIREMENTS: The system shall include a sprinkler riser connected to the water system, water flow indication and appurtenances, sprinkler heads and piping, and such other standard accessories as are necessary for a complete, approved system. The design and installation shall be accomplished by a qualified, responsible contractor recognized as a fully-experienced specialist in automatic sprinkler systems. All devices and equipment shall be of make and type listed by the Underwriters' Laboratories, Inc., or approved by the Factory Mutual Laboratories. Materials shall be of approved, standard quality, and the entire installation shall be accomplished in a thorough and workmanlike manner. Sprinkler heads shall be spaced according to National Fire Protection Association Standards. All work and materials shall conform with current requirements of the N.F.P.A. as published in their Standards Nos. 13, 15, 16, 16A, 24, and 409, latest editions. The provisions of these Standards, unless otherwise specified, shall be followed in total whether the stipulations listed therein are directed or recommended. The riser assemblies and trimmings shall be installed approximately at the locations indicated. Detailed working drawings of the system and catalog information shall be prepared by an accredited sprinkler installation company and shall be submitted to the Contracting Officer for review and approval of the CQC representative prior to the fabrication of the system. The drawings shall be submitted in a complete set for the area as indicated; partial submissions will not be acceptable. Timbers, uprights, hangers, piping, lighting fixtures, ducts, etc., are likely to interfere with the proper distribution of water from sprinklers. Therefore, sprinklers should be so located or spaced that any interference is held to a minimum. In connection herewith, the contractor shall obtain coordination among the trades so as to avoid any interference with potential effectiveness of the automatic sprinkler system.

MATERIALS:

1. Valves.

a. Controlling gate valves located at sprinkler riser(s) shall be either O.S. & Y. valves or butterfly valves. They shall be of the Underwriters' Laboratories pattern and listing, or Factory Mutual approved. If either of the above noted valves are not used at the sprinkler riser(s), then-listed or approved post indicator valve assemblies shall be provided on the underground main supplying the sprinkler riser.

b. (Pre-action) (Deluge) sprinkler valve shall operate electrically and shall be specifically approved by Underwriters' Laboratories or Factory Mutual for use as a special system water control valve for use in controlling water flow to (pre-action) (deluge) sprinkler system. The valve shall be installed with the number of accessory devices to form a (pre-action) (deluge) system such as described in NFPA Standard No. 13. An O-S. & Y. valve shall be provided directly below each pre-action or deluge valve and no post indicator valve assembly is permitted on the underground main supplying these type of valves.

2. Sprinkler heads shall be Underwriters' Laboratories listed or Factory Mutual approved. The PACNAVFACENGCOM Fire Protection Engineer shall determine the sprinkler head degree rating for pre-action systems. Heads installed where they might receive mechanical injury shall be protected with approved guards. Spacing of heads and design density discharge requirements shall be determined by the PACNAVFACENGCOM Fire Protection Engineer. Pendant heads, where required, shall be installed as shown in NFPA Standard No. 13. Sprinkler heads shall be nominal 1/2-inch size and shall be of the open type for deluge systems and closed type for pre-action systems.

3. Sprinkler cabinet with approved number of sprinkler heads (of all types and ratings installed) and a sprinkler wrench shall be provided for the system and installed where directed.

4. Approved devices shall be installed for the automatic transmission of water flow alarms, connected to any existing station exterior fire alarm system and connected for the sounding of a local fire alarm upon tripping of the (deluge) (pre-action) valve and upon actuation of a heat responsive device on the pre-action system.

5. Supervision. Release systems and heat-responsive devices shall be automatically supervised. Sprinkler piping for pre-action systems shall be supervised by maintaining low air pressure. Supervisory alarm shall be local and where required transmitted to a central location.

6. Heat Responsive Detectors. Devices for operation of deluge valves normally incorporate fixed temperature and rate-of-rise detectors. Operation of pre-action valves will require one of the following types of detectors: rate-of-rise and fixed temperature or smoke. The type required will be determined by the PACNAVFACENGCOM Fire Protection Engineer based on the importance of earliest possible detection of fire. Emergency battery power shall be provided to operate the system in the event of failure of primary electric power. Switchover from primary power to battery power shall be automatic.

7. Tests. Upon completion of the installation, the system shall be hydrostatically tested and alarm devices tested including supervisory devices by the installing contractor as specified in NFPA Standard No. 13. In addition, a&l detectors for actuation of the (deluge) (pre-action) valves shall be fully tested simulating actual heat and/or smoke conditions by utilizing approved type testing devices as recommended by the manufacturer. The above tests shall be conducted in the presence of the Contracting Officer. The contractor shall submit a signed and dated certificate to the Contracting Officer as stipulated in NFPA Standard No. 13, Section on Acceptance Tests. Deluge sprinkler systems shall be tested under full flow water flow conditions. Final testing shall be witnessed by the PACNAVFACENGCOM Fire Protection Engineer who will recommend the system for acceptance or nonacceptance to the Contracting

8. Interruption of Service. There shall be no interruption of existing sprinkler protection, water:, electric or fire alarm service without prior written permission of the Contracting Officer. Permission shall be requested at least 48 hours before planned interruption.

IV  
SPECIFICATION  
GUIDELINE DATA  
AUTOMATIC WET-PIPE SPRINKLER SYSTEMS

(Refer to NAVFAC Guide Specification NFCS-15501 for further information in developing detailed specifications)

GENERAL DESCRIPTION: A wet-pipe sprinkler system is the most common. All piping is filled with water under pressure which is immediately discharged only at sprinkler heads which have operated and flow continues until shut-off. The sprinkler system is provided with devices to sound an alarm upon water flow from one or more sprinklers.

REQUIREMENTS: The PACNAVFACENCOM Fire Protection Engineer will determine the requirement for the installation of wet-pipe sprinkler systems based on type of construction, occupancy and other factors upon project submittal.

GENERAL: The work includes complete design, the furnishing of all materials, equipment, and labor for the installation of a wet-pipe sprinkler system, complete and ready for standard operation in areas indicated.

SPECIFIC REQUIREMENTS: The system shall include a sprinkler riser connected to the water system, water flow indication and appurtenances, sprinkler heads and piping, and such other standard accessories as are necessary for a complete, approved system. The design and installation shall be accomplished by a qualified, responsible contractor recognized as a fully-experienced specialist in automatic sprinkler systems. All devices and equipment shall be of make and type listed by the Underwriters' Laboratories, Inc., or approved by the Factory Mutual Laboratories. Materials shall be of approved, standard quality, and the entire installation shall be accomplished in a thorough and workmanlike manner. Sprinkler heads shall be spaced according to National Fire Protection Association Standards. All work and materials shall conform with current requirements of the NFPA Standards Nos. 13, 15, and 24, latest editions. The provisions of these standards, unless otherwise specified, shall be followed in total, whether the stipulations listed therein are directed or recommended. The riser assemblies and trimmings shall be installed approximately at the locations indicated. Detailed working drawings of the system and catalog information shall be prepared by an accredited sprinkler installation company, and shall be submitted to the Contracting Officer for review and approval of the CQC representative prior to the fabrication of the system. The drawings shall be submitted in a complete set for the area as indicated; partial submissions will not be acceptable. Timbers, uprights, hangers, piping, lighting

fixtures, ducts, etc., are likely to interfere with the proper distribution of water from sprinklers. Therefore, sprinklers should be so located or spaced that any interference is held to a minimum. In connection herewith the contractor shall obtain coordination among the trades so as to avoid any interference with potential effectiveness of the automatic Sprinkler system.

MATERIALS:

1. Valves.

a. Controlling gate valves located at sprinkler riser(s) shall be either O.S. & Y. valves or butterfly valves. They shall be of the Underwriters' Laboratories pattern and listing or Factory Mutual approved. If either of the above noted valves are not used at the sprinkler riser(s), then listed or approved post indicator valve assemblies shall be provided on the underground main supplying the sprinkler riser.

2. Sprinkler heads shall be Underwriters' Laboratories listed or Factory Mutual approved. The PACNAVFACENCOM Fire Protection Engineer shall determine the sprinkler head degree rating during the design review stage. Heads installed where they might receive mechanical injury shall be protected with approved guards. Spacing of heads and design density discharge requirements shall be determined by the PACNAVFACENCOM Fire Protection Engineer during the design review stage. Pendant heads, where required, shall be installed as shown in NFPA Standard No. 13.

3. Sprinkler cabinet with approved number of sprinkler heads (of all types and ratings installed) and a sprinkler wrench shall be provided for the system and installed where directed.

4. Approved devices shall be installed on the sprinkler riser for the automatic transmission of water flow alarms connected to any existing station exterior fire alarm system and connected for the sounding of a local fire alarm and shall be such that a flow of water equal to or greater than that from a single sprinkler head will cause the transmission of a fire alarm. Each wet-pipe sprinkler riser assembly and its appurtenances shall be so arranged and equipped in an approved manner that the transmission of accidental water flow alarms (due to surges or related conditions) will positively be prevented.

INTERRUPTION OF SERVICE: There shall be no interruption of existing sprinkler protection, water, electric, or fire alarm service without prior written permission of the Contracting Officer. Permission shall be requested at least 48 hours before planned interruption.

EXCESS PRESSURE PUMPS will not normally be required.

TESTS: Upon completion of the installation, the system shall be hydrostatically tested and flushed as specified in NFPA Standard No. 13, in the presence of the Contracting Officer or his authorized representative. When hydrostatic, pneumatic, trip and alarm tests

have been completed and all necessary corrections made, the Contracting Officer shall be advised so as to permit final inspection and acceptance. The installation foreman or other competent representative of the contractor shall be present during final inspection. The contractor shall submit a signed and dated certificate to the Contracting Officer as stipulated in NFPA Standard No. 13, Section on Acceptance Tests. Final testing shall be witnessed by the PACNAVFACENGCOM Fire Protection Engineer who will recommend the system for acceptance or nonacceptance to the Contracting Officer.

V  
SPECIFICATION  
GUIDELINE DATA  
AUTOMATIC DRY-PIPE SPRINKLER SYSTEMS

(Refer to NAVFAC Guide Specification NFGS-15502 for further information in developing detailed specifications)

GENERAL INFORMATION: A dry-pipe sprinkler system is used where buildings are unheated and water in piping would freeze. The sprinkler piping contains air under pressure, which holds back the water at a dry pipe valve in a heated location. When a sprinkler head activates, the air in the piping is released and the drop in air pressure trips the dry pipe valve and admits water to the system piping with discharge from any activated sprinkler head.

REQUIREMENTS: Due to the climatic conditions, dry pipe sprinkler systems are not normally installed in the Pacific area, except for their installation in large cold storage facilities. The PACNAVFACENCOM Fire Protection Engineer will determine requirements for dry pipe sprinkler systems upon project submittal.

GENERAL: The work includes complete design, the furnishing of all materials, equipment and labor for the installation of dry-pipe sprinkler system, complete and ready for standard operation in areas indicated.

SPECIFIC REQUIREMENTS: The system shall include a sprinkler riser connected to the water system, water flow indication and appurtenances, sprinkler heads and piping, and such other standard accessories as are necessary for a complete, approved system. The design and installation shall be accomplished by a qualified, responsible contractor recognized as a fully-experienced specialist in automatic sprinkler systems. All devices and equipment shall be of make and type listed by the Underwriters' Laboratories, Inc., or approved by the Factory Mutual Laboratories. Materials shall be of approved, standard quality, and the entire installation shall be accomplished in a thorough and workmanlike manner. Sprinkler heads shall be spaced according to National Fire Protection Association Standards. All work and materials shall conform with current requirements of the NFPA as published in their Standards Nos. 13, 15, and 25, latest editions. The provisions of these standards, unless otherwise specified, shall be followed in total, whether the stipulations listed therein are directed or recommended. The riser assemblies and trimmings shall be installed approximately at the locations indicated. Detailed working drawings of the system and catalog information shall be prepared by an accredited sprinkler installation company and shall be submitted to the Contracting Officer for review and approval of the CQC representative



prior to the

fabrication of the system. The drawings shall be submitted in a complete set for the area as indicated; partial submissions will not be acceptable. Timbers, uprights, hangers, piping, lighting fixtures, ducts, etc., are likely to interfere with the proper distribution of water from sprinklers. Therefore, sprinklers should be so located or spaced that any interference is held to a minimum. In connection herewith, the contractor shall obtain coordination among the trades so as to avoid any interference with potential effectiveness of the automatic sprinkler system.

MATERIALS:

1. Valves.

a. Controlling gate valves located at sprinkler riser(s) shall be either O.S. & Y. valves or butterfly valves. They shall be of the Underwriters' Laboratories pattern and listing, or Factory Mutual approved. Outside control valves shall be of the post indicator type.

b. Dry pipe valve shall be specifically approved by Underwriters' Laboratories or Factory Mutual for its intended use.

2. Sprinkler heads shall be Underwriters' Laboratories listed or Factory Mutual approved. The PACNAVFACENGCOM Fire Protection Engineer shall determine the sprinkler head degree rating during the design review stage. Heads installed where they might receive mechanical injury shall be protected with approved guards. Spacing of heads and design density discharge requirements shall be determined by the PACNAVFACENGCOM Fire Protection Engineer during the design stage. Pendant heads where required, shall be installed as shown in NFPA Standard No. 13. Sprinkler heads shall be nominal 1/2 inch size.

3. Sprinkler cabinet with approved number of sprinkler heads (of all types and ratings installed) and a sprinkler wrench shall be provided for the system and installed where directed.

4. Approved devices shall be installed for the automatic transmission of water flow alarms connected to any existing station exterior fire alarm system and connected for the sounding of a local fire alarm upon tripping of the dry pipe valve.

5. Air compressors shall be installed in accordance with requirements of NFPA Standard No. 13. Each air compressor shall have sufficient capacity to fill any single dry-pipe system within a period of thirty minutes, and shall have 25 percent additional air capacity. Each air compressor shall be complete with motor, vee belts, A.S.M.E. Code air receiver, pressure gauge, high and low pressure switches, starting devices, receiver drain, air intake filter, belt guards, etc. Air compressors and/or receivers subject to mechanical injury shall be protected by suitable rails or guards. Air supply to compressors shall be taken from an unheated building area subject to minimum anticipated temperatures.

INTERRUPTION OF SERVICE: There shall be no interruption of existing sprinkler protection, water, electric, or fire alarm service without prior written permission of the Contracting Officer. Permission shall be requested at least 48 hours before planned interruption.

TEST: Upon completion of the installation, the system shall be hydrostatically tested and flushed as specified in NFPA Standard No. 13, in the presence of the Contracting Officer or his authorized representative. When hydrostatic, pneumatic, trip and alarm tests have been completed and all necessary corrections made, the Contracting Officer shall be advised so as to permit final inspection and acceptance. The installation foreman or other competent representative of the contractor shall be present during final inspection and acceptance. The installation foreman or other competent representative of the contractor shall be present during final inspection. The contractor shall submit a signed and dated certificate to the Contracting Officer as stipulated in NFPA Standard No. 13, Section on Acceptance Tests. Final testing shall be witnessed by the PACNAVFAC-ENGCOM Fire Protection Engineer who will recommend the system for acceptance or nonacceptance to the Contracting Officer.

VI  
SPECIFICATION  
GUIDELINE DATA  
WATER SUPPLY FOR FIRE PROTECTION

The PACNAVFACENGCOM Fire Protection Engineer has the responsibility for establishing fire flow requirements at various locations at Navy shore facilities. Based on fire flow demands, station water storage requirements are established. Since fire flow demands are usually greater than domestic or industrial demands, the fire flows normally govern the design of water supply systems which must accommodate fire flows plus a certain percentage of the average domestic requirements and industrial or flushing demands that cannot be restricted during fires. The accomplishment of design projects for water supply systems must include the close review of the PACNAVFACENGCOM Fire Protection Engineer. Station master development plans shall include adequate water supplies for future fire protection demands which will be established by the PACNAVFACENGCOM Fire Protection Engineer. Fire flow demands and water storage requirements shall comply with MIL-HDBK-1008A, Fire Protection for Facilities Engineering, Design, And Construction (most current edition). A close surveillance of station water supplies for fire protection will be maintained on a periodic basis with serious deficiencies brought to Command attention for possible correction.

A reliable and adequate supply is required for fire department hose streams and automatic sprinklers. In order to determine the adequacy of a water supply, it is essential that the A-E provide the following information at the site of the project during the development of the 35% Design.

- a. Static water pressure with no flow from fire hydrants.
- b. Flow in CPM or pitot tube reading from 1 - 2-1/2" hydrant outlet.
- c. Residual water pressure with 1 - 2-1/2" hydrant outlet flowing.
- d. Flow in GPM or pitot tube reading from 2 - 2-1/2" hydrant outlets.
- e. Residual water pressure with 2 - 2-1/2" hydrant outlets flowing.
- f. Size of water main supplying hydrants.
- g. Hydrant identification numbers.
- h. Time and date of test(s).
- i. Location of hydrants in relation to nearest buildings(s).

VII  
SPECIFICATION  
GUIDELINE DATA  
AIR CONDITIONING SYSTEMS

GENERAL INFORMATION: Details on safeguarding against the hazards of duct systems are given in the National Fire Protection Association Standard No. 90A, Installation of Air Conditioning and Ventilating Systems of Other Than Residence Type and is intended to prescribe reasonable provisions based on minimum requirements for safety to life and property from fire.

CRITERIA: All air conditioning systems shall be designed to satisfy the provisions of NFPA Standard No. 90A, latest edition. The PACNAVFACENGCOM Fire Protection Engineer will determine the necessary fire protection requirements such as smoke detection systems, installed fire extinguishing equipment, etc. In new construction, corridors are not permitted to be used for return air unless the requirements of NFPA Standard No. 90A are fully complied with. Special protection, as determined by the PACNAVFACENGCOM Fire Protection Engineer will be required where circumstances dictate the use of corridors for return air handling in existing structures.

SIGNIFICANT FIRE PROTECTION FEATURES FOR INCLUSION IN SPECIFICATIONS:

1. All flexible connectors, linings, coverings, insulations, vapor barriers, and adhesives associated with duct work, equipment, etc., shall have an Underwriters' Laboratories, Inc. flame spread rating not over 25 and a smoke development rating not higher than 50 (in special cases, the PACNAVFACENGCOM Fire Protection Engineer may require flame spread and smoke development ratings of a lesser degree). \*See Note.

2. Manual emergency stops located at conveniently accessible locations shall be provided for quick shutting down of fans in the event of fire. In addition, necessary devices and connections shall be installed as required by the PACNAVFACENGCOM Fire Protection Engineer to automatically shut down fans upon actuation of fire protection equipment such as automatic sprinklers, manual or automatic fire alarm systems or smoke detectors. In some cases, smoke removal may be of prime importance such as in windowless structures. Where required, as determined by the PACNAVFACENGCOM Fire Protection Engineer, controls will be provided to arrange air conditioning for smoke removal by 100% exhaust of return air or other suitable means.

3. Air filters shall be of the approved types qualifying as Class 1 or 2 as defined in NFPA Standard 90A and as listed by Underwriters' Laboratories, Inc., or Factory Mutual approved. High efficiency filter units for clean rooms, etc., shall be listed by Underwriters' Laboratories, Inc. \*See Note.

4. Heaters shall have safety Cut-outs to disconnect the power supply in the event of failure of air circulation fans.

\*NOTE : Flame spread and smoke development ratings and filters are listed in the Underwriters' Laboratories, Inc., Building Materials List - latest edition or Factory Mutual approved-equipment and materials listings for industrial fire safety, latest edition.

VIII  
SPECIFICATION  
GUIDELINE DATA  
INTERIOR FINISHING MATERIALS AND INSULATION  
FOR  
NEW CONSTRUCTION REHABILITATION  
AND/OR ALTERATION OF-EXISTING FACILITIES

GENERAL INFORMATION: Interior finish is defined as the material of walls, ceilings, wainscoting and other interior surfaces of a building and surfacing materials applied to the walls and ceilings. (More specifically defined as the non-structural components of construction.) Exposed insulation and acoustical materials are considered in the category of interior finish. Interior finish is related to life safety in that the materials could be the source of excessive generation of toxic gaseous products. There are three major aspects of the hazards of combustible interior finishes: (1) susceptibility to ignition; (2) spread of fire and smoke; (3) vulnerability of combustible concealed spaces behind finish material.

REQUIREMENTS:

1. INTERIOR FINISH: Shall conform to requirements of NFPA Standard No. 101 except as follows:

(a) Interior finish for "Exits" shall be Class A only.

(b) Interior finish materials for other than "Exits" shall be Class A or Class B only, except that in hospitals, individual rooms with a capacity for 5 or more persons shall have Class A only.

(c) "Smoke Developed" Classification by ASTM E-84 Test shall be:

(1) Not higher than 50 for Class A interior finish materials.

(2) Not higher than 100 for Class B interior finish materials.

(d) Cellular plastics shall not be used as interior finish materials.

2. INSULATION: Thermal and acoustical insulation shall have flame spread rating not higher than 75, and smoke developed rating not higher than 150 by ASTM E-84 Test. Cellular plastic insulation shall be tested in the same densities and thicknesses as the material will be used in actual construction applications.

(a) Compliance with the smoke developed limitation is not required and a greater flame spread rating of 100 is permitted for

insulation, including insulating sheathing, installed within wall assemblies. In such installations, the interior finish materials shall conform to paragraph 1 above and shall have a minimum fire retardant rating of 15 minutes by ASTM E-119 Test when installed as used in the actual construction application.

(b) Compliance with flame spread and smoke developed limitation is not required for the following applications:

(1) Insulation installed above poured-concrete or poured-gypsum roof decks, nominal.2 inch thick T&G wood plank roof decks, or precast roof deck panels or planks which are Factory Mutual approved as Noncombustible roof deck construction.

(2) Insulation installed above roof decks where the entire roof construction assembly, including the insulation, is Underwriters' Laboratories listed as fire Acceptable or Factory Mutual approved for Class I roof deck construction.

(3) Insulation contained entirely within panels where the entire panel assembly, as will be used in the actual construction application, meets the flame spread and smoke developed limitations cited above.

(4) Insulation isolated from Interior of building by masonry walls (cavity walls), insulation encased in masonry cores, or by concrete floors.

(5) Insulation installed over concrete floor slab and completely covered by wood T&C flooring without creating air spaces within the flooring system.

(6) Insulation completely enclosed in hollow metal doors.

(7) Insulation installed between exterior siding materials and wood board, plywood, fiberboard, or gypsum exterior wall sheathing.

NOTE : The exception to smoke developed limitation in item (6) is not applicable to hospitals and confinement (correctional) facilities.

3. APPLICABILITY OF FIRE PROTECTION CRITERIA: 'The ability of an insulation material to meet flame spread and smoke development requirements alone does not constitute approval of an insulating material. In addition to fire protection criteria insulation shall conform to all other specified recognized performance requirements.  
\*See Note.

\*NOTE : Flame spread and smoke development ratings are listed in the Underwriters' Laboratories, Inc., Building Materials List, latest edition and in the Factory Mutual approved equipment and materials listing for industrial fire safety, latest edition.

4. CARPET: All carpet shall comply with CPSC FF 1-70. Carpet for corridors shall also meet the acceptance criteria specified below when the carpet system (carpet and cushion) is tested in accordance with UL 992 or Federal Test Method Standard 372. For this purpose corridor is defined as an enclosed space connecting a room or compartment with an exit, and may include normal extensions such as lobbies and other enlarged spaces.

UL 992: Flame propagation index of less than 4.0 for corridor carpet in all facilities.

Fed. Std. Test Method 372: Minimum average critical radiant flux of 0.50 watts per square centimeter for corridor carpet in:

- Unmarried Enlisted Quarters..
- Unmarried Officer Quarters
- Hospitals
- Temporary Lodging Facilities

Minimum average critical radiant flux of 0.25 watts per square centimeter for corridor carpet in all other facilities.

5. FABRICS : Fabrics used in theater scenery, curtains and drapes in personnel buildings, such as UEPHs, UOPHs, hospitals and in places of assembly should be of noncombustible material or flame proofed according to NFPA Standard No. 701.



IX  
SPECIFICATION  
GUIDELINE DATA  
USE OF PLASTICS

GENERAL INFORMATION: Plastics in general are combustible, much like wood, paper and textiles. Like these materials, they are useful in construction. As with wood, paper and textiles, combustibility shall be considered in their use. Nearly all of the plastic materials have extremely high smoke development ratings and should not be used in personnel buildings such as UEPHs, UOPHs, office buildings, hospitals, etc., where life safety is of primary concern.

REQUIREMENTS : Use of plastic panels shall be limited to use in industrial-type buildings and limited to materials having a flame spread rating of 25 or less. This requirement also applies to the use of plastic glazing. Even with a flame spread of 25 or less, the use of plastic panels may result in more severe fire exposures between buildings and between floors of individual buildings. Two types of plastic insulation known as foamed polystyrene and polyurethane are appearing in specifications for use as insulation in cold storage and other types of facilities. In general, these materials readily support combustion and are deformed by heat and shall not be utilized, except that they may be used in cold storage and other types of facilities if the plastic is sandwiched between noncombustible materials. The PACNAVFACENGCOM Fire Protection Engineer shall determine the extent and use of any plastic material for use in features of construction, particularly involving foamed plastic insulation.

X  
SPECIFICATION  
GUIDELINE DATA  
ROOF SURFACING AND ASSEMBLIES

BACKGROUND: The fire resistance of roofs is an important factor in the ability of structures to withstand fires from exterior sources. Ignition of buildings may occur from exposure to fires by radiated or convected heat; direct contact of flame and from flying brands and embers. Major conflagrations have been caused by flying brands on roof surfaces.

ROOFING MATERIALS: NFPA No. 203M, Roof Coverings, divides materials having suitable fire resistance into Classes A, B, C. The listings of built-up and prepared roof materials are found in UL, Building Materials Directory. Insulated roof decks are composed of metal decking with materials (adhesive, vapor barrier, insulation and roof surfacing) added in layers to the deck. The combustibility of the assembly is a function of the materials used and method of application. The UL listing is referenced for details on acceptable roof deck construction from an interior fire exposure standpoint.

APPLICATION: MIL-HDBK-1008A (most current edition) specifies the use of either class A, B, or C roof surfacings. Materials shall be listed in UL Building Material Directory. Wood shingles are acceptable only when treated to meet UL requirements for Class C listing.

XI  
SPECIFICATION  
GUIDELINE DATA  
FIRE PREVENTION DURING CONSTRUCTION

GENERAL INFORMATION: Buildings under 'construction are inherently more hazardous from a fire standpoint than when completed because of the large amount of combustible construction materials and numerous sources of ignition. This results in many costly fires. To combat these losses, fire safety measures shall be included under section entitled "Additional General Paragraphs" in specifications:

REQUIREMENTS: Contract specifications shall reference the Army Corps of Engineers "Safety and Health Requirements Manual" and shall contain the requirement that activity fire regulations be followed. In addition, the following specific items should be included in section entitled "Additional General Paragraphs" under "Fire Prevention During Construction."

1. All accumulations of combustible material shall be removed from the building on a daily basis and stored a safe distance from new or existing construction.

2. Melting kettles for tar, asphalt and similar materials shall not be closer than 25 feet to buildings or combustible materials. Fire protection shall consist of a minimum of two 20 or 30 pound dry chemical extinguishers at the melting kettle and the area of tar application. Kettles for heating materials shall be equipped with proper heat controls and means of agitation to assure controlled uniform temperatures throughout contents to prevent spot heating. The material shall not be heated above the temperature necessary to produce workable fluidity and in no case above its flash point.

3. Oil painting materials (paints, brushes, empty paint cans, rags, drop cloths, etc.) and flammable liquids shall be removed from the building at the end of each working day and stored in a safe detached location. Gasoline or similar liquid shall not be allowed within the building except in gasoline powered equipment which will be refueled outside of the building. Gasoline shall be stored in U.L. or F.M. approved safety containers. Adequate ventilation shall be provided to safely dispose of flammable vapors where flammable liquids are utilized.

4. Proper precautions shall be taken prior to performing any hot work (welding, cutting, etc.). Combustible materials shall be removed from the area of hot work or noncombustible shields utilized to guard against flying sparks or molten metal coming in contact with combustible materials.

5. The contractor shall provide an adequate number of the proper size and type of fire extinguishers in the building as determined by the Station Fire Chief.

6. The contractor shall be familiar with methods for notifying the station fire department and the station fire bill shall be posted in conspicuous locations and at telephones in construction shacks.

7. Care shall be exercised in not painting existing or new automatic sprinkler heads.

XII  
SPECIFICATION  
GUIDELINE DATA  
FAMILY HOUSING SMOKE DETECTORS

GENERAL DESCRIPTION: In order to provide increased occupant safety in family housing, smoke detectors shall be specified for new and existing housing contracts. Smoke detectors are capable of detecting a fire at the earliest possible time and producing an audible alarm signal in the household for the purpose of notifying the occupants of the presence of a fire so they may evacuate the premises.

GENERAL:

1. The contractor shall furnish and install one smoke detector near each bedroom area and on each floor as indicated on contract drawings.
2. The smoke detector shall be a single station type incorporating the detector, control equipment and the alarm-sounding device in one unit. Alarm sounding device shall have a minimum rating of 85 dba at 10 feet. Smoke detectors shall be Underwriters' Laboratories listed or Factory Mutual approved and shall be of the ionization or photocell type 1
3. The installation shall comply in all respects with the National Fire Protection Association (NFPA) Standard No. 74, Household Fire Warning Equipment. Smoke detectors shall be ceiling mounted and located as indicated in NFPA No. 74.

POWER SUPPLY:

1. Source of power shall be AC and installation shall comply with Article 760 as defined in the National Electrical Code NFPA No. 70. Smoke detectors shall be provided with a "power on" indicator and be permanently wired to a standard junction box, with power supply not subject to loss of power by a wall switch.

DATA REQUIRED BY THE CONTRACTOR:

1. Prior to installation, the contractor shall submit catalog cuts of the equipment to be installed to the Contracting Officer for review and approval of the CQC representative.



DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING COMMAND

200 STOVALL STREET

ALEXANDRIA VA 22322-2300

**O4F**  
**29 NOV 1988**

Design Policy Letter DPL-88-0010

From: Commander, Naval Facilities Engineering Command

Subj: FIRE PROTECTION IN ELEVATOR HOISTWAYS

Ref: (a) ANSI/ASME A 17.1, Safety Code For Elevators And Escalators  
(b) NFPA No. 13, Sprinkler Systems'

1. Purpose: To provide guidance for the automatic shut down of the main power supply for elevators that are located in buildings which have automatic sprinkler protection.

2: Background: Individual interpretations of references (a) and (b) have caused problems in regards to the requirements for the disconnect of the main power supply for elevators prior to the operation of the sprinkler heads located in hoistways and machine rooms.

3. Policy Statement: It is the policy of the Naval Facilities Engineering Command (NAVFACENGCOM) to follow the following criteria for sprinklered buildings that have elevators:

a. Provide 212 degree Fahrenheit sprinkler heads on wet pipe branch lines that are located in the hoistways or machine rooms.

b. Provide 165 degree Fahrenheit rate compensated heat detectors at the roof/ceiling level of the machine rooms, at the underside of the hoistway ceilings and in the hoistway pit areas. Operation of these detectors shall activate the building fire alarm system which shall also transmit an alarm to the fire department and illuminate a warning sign and audible device in each elevator that is involved. The sign shall continue to be illuminated and the audible device shall continue to sound until the source potential is removed.

c. Provide a second head detector located adjacent to the 165 degree detector. Activation of this 190 degree Fahrenheit fixed temperature rating heat detector shall disconnect the main line power supply to the elevators.

d. The illuminated warning sign shall be located above or adjacent to the car operating panel. The glass portion of the fixture shall be at least three inches high and four inches wide. The warning message shall be backlighted in such a manner that when it is off, only a black glass is visible. Message on the-glass when illuminated shall be:

DANGER: FIRE!  
EXIT ELEVATOR  
NOW!

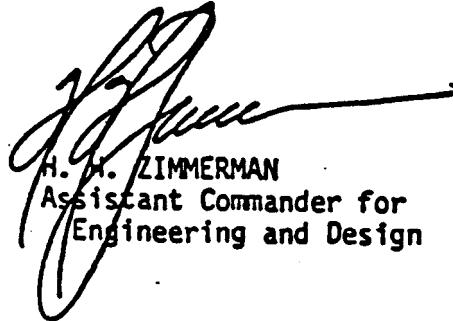
e. All features of the elevator shall comply with references (a) and (b).

APPENDIX N  
ATTACHMENT D

Subj: FIRE PROTECTION IN ELEVATOR HOISTWAYS

4. Action: NAVFACENGCOM Engineering field Divisions will incorporate the above criteria in the design of new buildings or modification of existing facilities until such time that the discrepancies between references (a) and (b) are resolved by NFPA and ANSI.

5. Point of Contact: Mr. R. A. Rice, Code 04F, autovon 221-0270 or commercial (202) 325-4270.



H. H. ZIMMERMAN  
Assistant Commander for  
Engineering and Design

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DEPARTMENT OF THE NAVY  
PACIFIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
(MAKALAPA, HI)  
PEARL HARBOR, HAWAII 96860-7300

11000  
Ser 408/11143  
31 OCT 1988

From: Commander, Pacific Division, Naval Facilities Engineering Command  
To: Distribution

Subj: PACNAVFACENGCOM FIRE PROTECTION ENGINEERING BRANCH POLICIES

Encl: (a) PACNAVFACENGCOM Fire Protection Engineering (Code 408) Branch  
Policies of 26 October 1988

1. Purpose. To provide updated fire protection engineering policies and to cancel the PACNAVFACENGCOM Fire Protection Engineering (Code 408) Branch Policies of 16 December 1986.
2. Action. Guidance provided by enclosure (1) is to be used for all new construction and all future rehabilitation and/or improvement projects taking place in the PACNAVFACENGCOM area of influence.
3. PACNAVFACENGCOM point of contact is Mr. Roger Parlee (Code 408), telephone (808) 474-5400.

A handwritten signature in black ink that reads "R.W. Parlee".

R W. PARLEE  
**By direction**

Distribution:

List X-1 (Nos. 1-4, 6-10, 12-29)  
NAVSTA Pearl Harbor (Consolidated Federal Fire Dept.)  
NAS Agana (Navy Consolidated Federal Fire Dept.)  
NAS Cubi Point (Navy Consolidated Federal Fire Dept.)  
COMFLEACT Yokosuka (Navy Consolidated Federal Fire Dept.)  
MCB Camp Smedley D. Butler (Consolidated Federal Fire Dept.)

APPENDIX N  
ATTACHMENT A



PACNAVFACENGCOM CODE 408  
BRANCH POLICIES

26 Oct 1988

APPLICABILITY:

These policies are general guidelines which are to be followed in addition to all applicable codes (DOD, NAVFAC, NFPA, etc.). Deviations from these policies may be made when necessitated by special conditions or code criteria changes and only when approved by PACNAVFACENGCOM Code 408.

Supersedes: Edition signed 16 Dec 1986

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Approved by:



R.W. Parlee  
PACNAVFACENGCOM  
Code 408 Branch Manager

APPENDIX N  
Enclosure (1)

## SECTION 1. ALARM AND DETECTION SYSTEMS

1.1 WAREHOUSE FIRE ALARM SYSTEMS: In warehouses requiring sprinkler protection, fire alarm evacuation systems and manual pull stations are required. Warehouses 5,000 square feet and less do not require evacuation systems. The sprinkler system's pressure/witch shall be connected to the base fire alarm reporting system.

1.2 HANDICAPPED FIRE ALARM SYSTEMS: Fire alarm systems in any structure accessible to handicapped persons (such as business, assembly, health care, or mercantile type structures) shall be designed for the handicapped. Examples: Audiovisual alarm notification devices for deaf persons, manual pull stations at a suitable height for persons confined to wheelchairs (4-foot maximum height), etc.

1.3 PIGGYBACKING: Avoid piggybacking fire alarm systems.

1.4 DETECTORS

1.4.1 Design/Contract Drawings: All design drawings which show fire detectors shall include the following note:

"Devices are shown in suggested locations. Final quantity and layout shall be in accordance with all applicable codes, manufacturer's recommendations, specification section(s)\_\_\_\_\_and equipment listings; Coordinate locations with lighting and air handling systems. Smoke detectors shall be located no closer than 3 feet from all supply air diffusers."

1.4.2 Detector Spacing: Spacing shall not exceed 25 feet. apart or 12 ½ feet from walls. When Detectors are under floor. above ceilings or cross zoned, they shall not be spaced greater than 15 feet apart or 7 ½ feet from walls. If more restrictive requirements are found in equipment listings or in NFPA 72E (1987 edition), these requirements shall be followed.

1.4.3 Screw Terminals: Specify screw terminals for wiring connections for all detectors. Plug-in harness is acceptable.

1.4.4 Concealed Detectors: All concealed detectors. (underfloor areas, attic spaces, duct detectors. blind spaces etc.) shall either be remotely annunciated in an occupied location or toned separately on the FACP.

1.4.5 Heat Detectors: All heat detectors shall be rate compensated type. Da not use or specify fixed temperature or rate of rise -type heat detectors. (See item 1.4.6.3).

1.4.6 Smoke Detectors: All smoke detector circuits shall be 4 wire circuits, i.e.. 2 wires for power and 2 wires for signaling.

1.4.6.1 Placement: Do not locate smoke detectors where they may be subject to false alarms (closets, storage rooms, janitor's closets, laundry rooms, toilets, kitchens, electrical & mechanical rooms, unfinished ceiling spaces or lobbies or vestibules adjacent to exterior doors).

1.4.6.2 Ventilation: In rooms where forced ventilation is present, locate smoke detectors no closer than 3 feet from all supply air diffusers. Locate detectors to favor the air flow toward return openings while still complying with item 1.4.2 above.

1.4.6.3 Lounge Smoke Detectors: In lounge areas of BOQs and BEQs the design shall include the installation of a single station 120 Vac smoke detector, plus a 135°F rated heat detector connected to the building fire alarm system.

1.4.6.4 Duct Smoke Detectors: Show duct smoke detectors on fire alarm riser diagrams. Specifications for duct detectors shall be in the fire alarm section and not in the mechanical sections. Shutdown of air handling units (AHU) upon alarm of duct smoke detectors shall be accomplished by the FACP. Provide supervised disconnect switches for each AHU shutdown circuit. On Navy projects, provide duct detectors as required by MIL-HDBK-1008A, paragraph 2-11.2.3 (dtd 31 March 1989). Air Force projects, duct detection shall be in accordance with NFPA 90A (1985 edition). On contract drawings, provide typical details for location of duct detectors in air handling equipment.

#### 1.4.7 Underfloor Detectors:

1.4.7.1 Mounting Details: Where underfloor detectors are to be installed, provide a typical mounting detail on the contract drawings showing proper mounting location at the top of the underfloor space.

1.4.7.2 Annunciation: Provide graphic annunciators for underfloor detectors. The annunciator shall depict a floor plan indicating device and zone locations. Zones shall also be indicated by word description. This does not apply to single-zone systems. All graphic annunciators shall be provided with a lamp test feature.

### 1.5 FIRE ALARM CONTROL PANELS (FACP)

1.5.1 Placement: Locate the FACP just inside a main building entrance in a visible accessible location. Where annunciation is needed, this shall be integral with the FACP. The intent of this is to allow fire departments to rapidly pinpoint activated alarm location. Remote annunciation may also be provided at designer's discretion. Consider recess mounting and interior color coordination.

1.5.2 Power Supply: The FACP power shall be taken from the line side of the main building cutoff unless it is fed by an emergency generator.

1.5.3 Standby Battery Power Supply: Standby battery power supply shall be capable of operating the entire system for 60 hours, and following this period, shall sound all alarm devices for a period of 5 minutes. Battery charger shall be capable of fully charging de-energized batteries in 42 hours.

1.5.4 Modules: All modules in the FACP shall be placement supervised. When a module is removed, a trouble signal shall be indicated.

1.5.5 Lamp Test: All FACP's shall have a lamp test feature.

1.6 MANUAL STATIONS: Specify screw terminals for wiring connections for all manual stations. Do not specify Break-Glass-Front type stations or pull-lever, Break-Glass-Rod type stations.

## 1.7 WIRING

1.7.1 Layout of New Systems: All signal initiation and notification circuits shall be Class A supervised. The return loop (home run) for the wires to the FACP shall be in a separate conduit and stated so in either the specifications or on the plans. Fire alarm riser diagrams shall show return conduits. Contract drawings shall also show either a matrix diagram or logic diagram for operation of all system devices.

1.7.2 Adding to an Existing System: When adding to an existing Class B supervised system, Class B wiring may be used. Drawings shall indicate manufacturer, model no., voltage and wiring Class for all existing systems.

1.7.3 Conductors: Wiring for 24 Vdc fire alarm circuits shall be no smaller than No. 16 AWG copper conductors, either solid or stranded (maximum of 7 strands) per 1987 National Electric Code.

1.7.4 Electrical Conduit: Electrical conduit shall be rigid metal, IMT or EMT. Do not use aluminum conduit. In hazardous areas use rigid metal conduit only. The minimum size conduit shall be 3/4-inch in diameter.

1.7.5 Voltage: The wiring of 120 Vac and 24 Vdc circuits shall not be placed in the same conduit. Separate conduits shall be used for 120 Vac and 24 Vdc circuits.

1.8 DOOR HOLD-OPEN DEVICES: 120 Vac door hold open devices shall be provided when fire or smoke doors are expected to be propped open for convenience or as a necessity of building operation. Regardless of the hold open method, all hold open devices in the same building must release when any one hold open device is released in accordance with NFPA 101, Section 5.2.1.8 (1985 edition). BOQs and BEQs 2 to 5 stories in height without elevators shall be provided with 120 Vac door hold open devices on all interior stairwell doors. When 120 Vac devices are used, the 120 Vac power wires shall be installed in separate conduit from the 24 Vdc conduit.

1.9 AUDIBLE ALARM DEVICES: Audible alarm devices shall be horns or electronic sound generators. Use 1 approximately 3000 ft<sup>2</sup> per audible alarm device in open areas; Visual alarm indicators shall be pulse or strobe type. Provide audiovisual alarms where occupancy is subject to higher than normal noise or for use by handicapped personnel.

1.10 SUBMITTALS: Contractor's submittal requirements in specifications shall include a layout plan of all fire alarm devices and conduit runs in addition to scaled shop drawings required by NAVFAC Guide Specification 16722. (Minimum size drawings that are acceptable is 1/10 scale.)

1.11 RADIO FIRE ALARM TRANSMITTERS and/or TRANSMITTER/INTERFACE PANEL: Where radio fire alarm transmitters are required, the designer shall provide a specification section for them. Careful consideration is necessary for placement of radio transmitters and antenna (obstructions, maximum height allowances, etc.). Place in transmitters in accessible, visible, and well travelled exterior locations. Combination transmitter/interface panels can be used.

1.12 ELEVATORS: Smoke detectors and/or heat detectors for elevator machine rooms and hoistway areas shall be controlled by the building's 24 Vdc FACP.

NOTE: Consult with Code 408 for sequence of operation details between the elevator controller and the building FACP.

## SECTION 2. SPRINKLER SYSTEMS

### 2.1 DESIGN OF SPRINKLER SYSTEMS

2.1.1 Navy & Air Force Projects: Design criteria diffusers between Navy and Air Force projects. Navy requirements for Occupancy classification, design density, remote area and hose stream allowances are specified in MIL-HDBK-1008A (dtd 31 March 1988). Air Force requirements are contained in AFR 88-15 (dtd December 1985).

2.1.2 Sprinkler Coverage: Sprinkler protection for all areas of the building shall be included under the sprinkler specification section. Sprinkler protection for freezers, coolers and covered loading docks shall be specifically called for in the contract plans and specifications. Do not specify sprinklers coverage under separate specification sections for special areas such as trash chutes, paint spray booths, elevators, etc.

2.2 HYDRAULIC ANALYSIS: The A-E shall conduct water flow tests at the proposed site and include pertinent test data in the 35% design Package. The A-E is also responsible for determining if the water supply is adequate to erect sprinkler and hose stream demands. For hydraulic calculations, deduct the hose Stream requirement at the point of connection to the existing distribution system or the Closest fire hydrant, whichever is Closer to the sprinkler riser. If these demands cannot be met, the A-E shall provide proper solutions to the problem of an insufficient water supply (i.e., fire pump(s), and/or water storage tank(s)). It is imperative that possible problems and solutions be identified as early possible. See PACNAVFACENGCOM instruction 1132O.5B paragraph 6.a for required format of water supply data. Provide reference points on drawings to show where water supply data is given. All systems Over 3000 square feet shall be hydraulically calculated.

### 2.3 SPRINKLER HEADS

2.3.1 Temperature Rating: Use intermediate temperature rated (212-F) sprinklers wherever NFPA 13 (1987 edition) requires ordinary (165-F) temperature rating. Use high temperature rated (296-F) sprinklers at ceiling/roof level Of warehouse occupancies.

2.3.2 On-off Intermittent Sprinkler Heads: Do not USC or specify "on-off" intermittent sprinkler heads.

2.3.3 Brig Facilities: Use tamper proof sprinklers in all detention and correctional facilities.

2.3.4 Piers and Wharfs: Sprinkler heads below a combustible pier-or wharf shall be pendant Sprinkler heads installed in the upright position. All sprinkler heads shall be of the corrosion resistant type.

## 2.4 SPRINKLER PIPING

2.4.1 Earthquake Sway Bracing: Earthquake sway bracing shall be installed on all sprinkler systems in accordance with paragraph 3-10.3.5 of NFPA 13 (1987 edition).

2.4.2. Interior Sprinkler Piping Layout: Interior sprinkler piping layout shall be done by the contractor based on a performance specifications. Contract drawings shall show underground feed main and Sprinkler risers, but not the interior piping and sprinkler heads. When allowed by PACNAVFACENGCOM Code 408, sprinkler layout may be shown on contract drawings only if such drawings include all necessary details required on installation shop drawings (see paragraph 1-9.2 of NFPA 13; 1987 edition).

2.4.3 Aboveground Piping: Do not use plastic pipe for aboveground sprinkler piping.

2.4.4 Underground Feed Mains: Underground sprinkler feed mains shall be no smaller than 6-inches in size.

## 2.5 SPRINKLER RISER

2.5.1 Location: The preferable location for all sprinkler risers is inside the building. If the sprinkler riser is located outside, a protective shelter shall be built around it. Provide guard posts for sprinkler risers located in open industrial or warehouse areas.

2.5.2 Anchor Rods: Provide anchor rods at the base of each sprinkler riser according to figure A-2-9.1 of NFPA 13 (1987 edition) and figure A-8-6.2(i) of NFPA 24 (1927 edition). Show these rods on riser details on contract drawings.

2.5.3 Control Valves: Each sprinkler riser shall be controlled by either a post indication valve (PIV) or an OS&Y gate valve, but not both. Pre-action and deluge systems shall have an OS&Y gate valve.

2.5.3.1 Supervision of Control Valves: All valves controlling sprinkler systems shall be supervised by one of the methods outlined in paragraph 3-14.2.3 of NFPA 13 (1987 edition). Plans or specifications shall indicate the type of supervision desired.

## 2.6 PRE-ACTION SYSTEM SPRINKLER SYSTEMS

2.6.1 Pre-Action Piping Supervision: For pre-action systems, use either plant air or tank-mounted air compressor(s). Specify a low air pressure switch for transmitting a low air signal to the FACP.

2.6.2 Pre-Action Deluge Valve Actuating Circuit: The pre-action deluge valve actuating circuit shall be Class A or solenoid coil supervised.

2.7 EXCESS PRESSURE PUMP: Do not use excess pressure pumps.

2.8 SPRINKLERS in ELECTRONIC AREAS: Where sprinklers are located in electronic areas, electronics power must automatically Shut down prior to water flow. Pre-action valves shall be operated by cross-toned smoke detectors. Pre-action sprinkler heads installed in the pendant position shall be the dry pendant type.

2.9 CLUBS: All clubs shall have sprinkler protection regardless of construction.

2.10 PRESSURE RELIEF VALVES: A pressure relief valve shall be installed for gridded wet pipe systems to prevent buildup of excess pressure due to thermal heating. Specify relief valve size to be a minimum of ¾-inch. Show relief valve on riser diagram located at the upper pressure gauge and piped to the outside.

2.11 WAREHOUSES: for warehouses, A-E shall design sprinkler protection in accordance with MIL-HDBK-1032/2 (dtd 30 Sept 1987), NFPA 231 (1987 edition) and 231C (1986 edition), as applicable. Storage heights shall be based on maximum available storage height when the minimum required clear space below sprinklers is maintained. Where rack storage will be provided, show rack configurations, shelving details, aisle width, etc. (plan view, elevation and details) on contract drawings. Indicate materials stored in the design. If solid shelving, sprinklers are required beneath each tier.

2.12 SPRINKLER HEADS for ELEVATOR SHAFTS: Provide sprinkler heads at the top and bottom of elevator shafts in accordance with ANSI A.17.1A (rule 102.2) and NFPA 13.

NOTE: Consult with Code 408 for specific details.



### SECTION 3. CARBON DIOXIDE AND HALON SYSTEMS

3.1 SEQUENCE of OPERATION: Where total room and/or underfloor flooding Systems are automatically actuated by cross-zoned Smoke detectors, the sequence shall be as follows:

- a. Upon actuation of the first detector (pre-alarm mode):
  - (1) A pre-discharge alarm (distinct from building general alarm) shall sound in the protected area.
  - (2) An alarm signal shall be transmitted to the Fire Department unless otherwise authorized by PACNAVFACENGCOM Code 408.
- b. Upon actuation of the second detector (discharge mode):
  - (1) Air handling equipment serving the protected area(s) shall shut down.
  - (2) All door closers and any required dampers to the protected area shall close.
  - (3) A red revolving light in the protected area must activate (not required if only underfloor flooding is being provided).
  - (4) A general building alarm shall sound.
  - (5) A time delay relay (Set at a minimum 20 seconds) shall Start, at the end Of the time delay the following shall occur:
    - (a) Discharge will occur in the protected area or zone where the alarm was initiated.
    - (b) Technical power in the affected area of zone shall shut down.

Note: Designer must consider if the particular technical equipment requires a phased shutdown.

- (c) A visual indicator (i.e., sign with lit face or flashing light above) outside the entrances to the area of Lone must activate, indicating that re-entry is prohibited (not required of only underfloor flooding is provided).
- (d) A signal shall transmit from the Halon control panel to the FACP to charge the pre-action sprinkler system in the protected area.

- c. Upon actuation of a manual station all functions under a and b above shall occur, including the time delayed discharge. Manual release station shall be dual action type.
- d. A pressure switch shall be connected to the FACP to sound a building general alarm but shall not initiate discharge sequence nor shut down any equipment.
- e. On Air force projects only, an abort switch shall be provided and shall be located within the protected area. No abort witch will be included in Navy projects unless specifically directed by PACNAVFACENCOM Code 408.

3.2 HALON or CO<sub>2</sub> SYSTEMS: Halon or CO<sub>2</sub> systems are not substitutes for required sprinkler protection in accordance with DOD criteria.

### 3.3 SUPPLY of HALON and CO<sub>2</sub>

3.3.1 Design Concentration for Halon 1301 in Electronic Equipment Spaces: For design of Halon 1301 systems in electronic equipment spaces, the design concentrations shall be 7%. A minimum concentration of 5% to a maximum of 7% shall be maintained for ten minutes.

3.3.2 Reserve Supply of Halon and CO<sub>2</sub>: Provide an in-place complete reserve supply of Halon and CO<sub>2</sub> for each system. On Navy projects, this reserve supply shall be connected through a main/reserve transfer switch. On Air Force projects, the reserve supply need not be connected.

3.3.3 C O<sub>2</sub> Supply: Locate CO<sub>2</sub> supply cylinders outside of, but adjacent to or as close as possible to the area(s) being protected. All CO<sub>2</sub> cylinders shall be the standard 75 lbs. size.

3.3.4 Halon Supply: For design of Halon 1301 systems, the designer shall locate storage tanks as close as possible to the hazard being protected without being in the hazard area. The designer shall insure that the percentage of Halon 3303 in the piping (as determined by paragraph 1-10.6.4 of NFPA 12A; 1987 edition) is less than 80%. Nozzle pressures shall be no less than 50% of the average discharge pressure.

3.4 HALON ACCEPTANCE TESTS: Final Halon acceptance tests shall include full discharge concentration tests (lasting a minimum of 10 minutes) in each protected area for each separate system. Halon 1301 shall be used during testing.

3.5 MANUAL STATIONS: All manual stations shall be distinct (i.e., signs, color and action) from manual building alarm station and stations for other extinguishing systems.

3.6 CO<sub>2</sub> HOSE REELS: No new CO<sub>2</sub> hose reels shall be installed in any building. Existing CO<sub>2</sub> hose reels shall be removed when remodeling.

### 3.7 SYSTEM PIPING

3.7.1 Cleaning Pipes: Before final testing, swab with alcohol all system pipes to remove all oil within the pipes. Include this in the specification.

3.7.2 CO<sub>2</sub> Piping Pressure Test: Specify 1000 psi pressure test for CO<sub>2</sub> piping. No more than 150 psi shall be lost in 2 minutes (per PACNAVFACENGCOM P-74, A-E Guide, appendix G, section III). Include this in the specification.

3.8 DOORS: All doors in the halon protected areas shall be equipped with closers and weather-stripping. Doors in the normally open position require electromagnetic door holders.

3.9 CONTROL PANELS: Control panels for Halon 1301 and CO<sub>2</sub> systems shall be equipped with separate alarm silence switches for pre-alarm and discharge alarm circuits.

3.10 ACTUATING CIRCUIT: The Halon or CO<sub>2</sub> system actuating circuit shall be Class A or solenoid coil supervised.

3.11 SEALING of the AREA: Cable penetrations and trenches shall be sealed. The designer shall provide an approved system for sealing openings, i.e., show a sealing system detail on the contract drawings.

3.12 GENERATORS: When generators are protected by gaseous extinguishing agents, the designers shall consider wind down time of the generator.

3.13 DRAINS: Where drains are provided, they are to be deep trapped type to prevent leakage of the gas. Drains shall be provided for all Air Force projects.

3.14 NAVTELCOM: No halon shall be installed in NAVTELCOM occupied spaces.

3.15 PARTITIONS: Show details of partitions extending down into underfloor areas.

## SECTION 4. DRY and WET CHEMICAL EXTINGUISHING SYSTEMS

4.1 MANUAL and AUTOMATIC DRY CHEMICAL SYSTEMS: All open griddles, deep fat fryers, charbroilers, plenums and ducts shall be protected with automatic dry or wet chemical system(s). The protection for plenum and duct may be deleted if an approved grease extractor is provided in the hood.

4.2 SYSTEMS: All systems shall be arranged to sound the building fire alarm system (where existing) and shut down power (gas and/or electric sources) to protected appliances under the protected hood. When a building does not have an alarm system, the dry chemical system must alert the fire department directly (where an exterior alarm reporting system exists). When approved wet type grease extractors are provided, these systems shall be arranged to automatically activate upon the dry or wet chemical system discharge.

4.3 SODIUM BICARBONATE TYPE DRY CHEMICAL: Use only sodium bicarbonate type dry chemical where cooking appliances are protected.

4.4 FINAL ACCEPTANCE TEST: Final acceptance test must use substitute gas in accordance with NFPA 17 (1985 edition).

4.5 MANUAL STATIONS: All manual stations shall be distinct (i.e., signs, different color) from any building manual alarm stations and stations for other extinguishing systems. Locate the manual station in the path of egress from the hazard.

4.4 DRY CHEMICAL SYSTEMS: The designer Shall provide a separate specification section for dry chemical systems.

4.7 WET CHEMICAL SYSTEMS: Approved wet chemical systems may be used in lieu of dry chemical Systems.

## SECTION 5. FIRE PUMPS

### 5.1 DIESEL ENGINE DRIVEN FIRE PUMPS

5.1.1 Diesel Fire Pumps: All pumps shall be diesel driven pumps unless the installation can comply with Chapter 6 of NFPA 20 (1987 edition).

5.1.2 Fire Pump Rotation: Pump rotation for diesel engine driven fire pump shall be clockwise.

### 5.2 FIRE PUMP DESIGN

5.2.1 Pump Installation: All pump installations shall include a flow meter in addition to a test header. The flow meter shall not discharge into the suction feed main supplying the fire pump. An approved butterfly valve shall be installed downstream of the flow meter.

5.2.2 Separate Bypass: All fire pumps taking suction from street mains shall be equipped with a separate bypass.

5.2.3 Isometric Piping Details: All contract drawings shall contain an isometric piping details of each fire pump installation.

5.2.4 Remote Alarms: All pump installations shall have remote alarms in a constantly occupied location.

### 5.3 FIRE PUMP CONTROLLERS

5.3.1 Primary Resistors: Primary resistors on electric fire pump controllers shall be enclosed in a cabinet separate from the rest of the controller components. All electric fire pump controllers shall be primary resistor type reduced voltage starting controllers.

5.3.2 Pressure Sensing Lines: Each pump controller shall have individual pressure sensing lines taken from the system side of the pump.

5.4 SALT WATER FIRE PUMPS: fill salt water fire pumps shall have special metallurgy or coating systems in accordance with manufacturer's recommendations.

### 5.5 FIRE PUMP LOCATIONS

5.5.1 Lighting of Pump Rooms: Provide emergency lighting in fire pump rooms.

5.5.2 Drains in Fire Pump Rooms: Fire pump rooms shall be provided with adequate floor drains and a drainage system to the exterior of the building. Circulation relief valves shall be piped to the outside of the building. All test outlets to discharge safely outside of the building.

5.5.3 Fire Pump Houses: All fire pump houses shall be constructed of noncombustible construction. Diesel driven pump houses shall be sprinklered.

5.6 DUAL DRIVEN FIRE PUMPS: No dual driven fire pumps shall be used.

5.7 SALTWATER SYSTEMS: Saltwater systems shall be installed for ships in cold iron. In other locations consider salt water systems on a case-by-case basis (per NAVFAC).

5.8 AUTOMATICALLY ACTUATED FIRE PUMPS: All fire pumps shall be automatically actuated via pressure drop and manually started at the fire pump controller. Remote automatic start shall be provided for aircraft hangars. All fire pumps shall be manually stopped, i.e., automatic stop or manual remote stop is prohibited.

## SECTION 6. FOAM EXTINGUISHING SYSTEMS

- 6.1 FOAM EXTINGUISHING PUMPS: Foam extinguishing pumps shall be designed in accordance with NFPA 20 (1987 edition).
- 6.2 SOLENOID OPERATED VALVES; All solenoid operated valves shall be equipped with manual release or manual bypass.
- 6.3 ORIFICE PLATES: Orifice plates installed in pipelines for purposes of reducing pressure are prohibited. Orifice plates used for proportioning foam concentrate and water are allowed.
- 6.4 FOAM WATER DELUGE (OPEN-HEAD) SYSTEMS: On Navy projects, primary aircraft hangar protection shall be foam water deluge (open-head) systems.
- 6.5 CLOSED-HEAD FOAM WATER SPRINKLER SYSTEMS: Closed-head foam water sprinkler systems shall be pre-action type (i.e., for flammable liquid warehouse, hazardous waste storage, etc.)
- 6.6 POL ABOVEGROUND STORAGE TANKS: Foam extinguishing systems for POL aboveground storage tanks shall employ "over-the-top" application using foam chambers.
- 6.7 FOAM PIPING MATERIALS: Foam piping materials to be compatible with agent for long term use.
- 6.8 ELECTRIC EQUIPMENT in HANGARS: Electric equipment beneath sprinkler systems in hangars shall be weather proof.
- 6.9 NEW FOAM WATER SYSTEMS: All new foam water systems shall use 3% concentration.
- 6.10 BLADDER TANKS: Bladder tanks shall not be used in foam systems. Use foam pumps and atmospheric tanks.

## SECTION 7. MISCELLANEOUS

7.1 EXIT SIGNS: Exit signs shall be self-illuminated and have self contained battery backup power.

7.2. EXPOSED INSULATION: Exposed insulation in concealed spaces of sprinklered buildings shall be specified to have a flame spread of 25 or less and a smoke developed rating of 50 or less (including paper covering). This is to prevent the space from being defined as combustible concealed space which would require sprinkler protection in accordance with NFPA 13 (1987 edition). Acceptable type of insulation blankets per Federal Spec HH-521F are Type I, Type II (Class A only), and Type III (Class III only). Any insulation conforming to Federal Spec HHI-558B is acceptable for this application.

7.3 FIRE DOORS: Fire doors shall be installed in listed or approved door frames. Wired glass shall be installed in steel frames. Aluminum or wood frames are prohibited.

7.4 CARPET: Carpet shall not be used as interior wall finish.

7.5 STANDPIPES: All standpipes shall be Class I. No hose shall be installed.

7.6 VERTICAL STANDPIPE INSTALLATIONS: Vertical standpipe installations shall be concurrent with individual floor construction, such that, they may be used during an emergency during construction.



## MEMORANDUM

DATE: 10 December 1990  
FROM: PACDIV Code 408  
TO:  
SUBJ: FIRE PROTECTION EQUIPMENT - JAPAN  
REF: (a) Underwriters Laboratory ( UL ) Fire Protection Equipment Directory, 1990

1. In accordance with reference (a) the following Japanese manufactured fire protection equipment is currently listed by UL:
  - a. Halon 1301 Systems: Koatsu Gas Kogyo Co., Ltd., Sub of Nohmi Bosai Kogyo Co., Ltd., Hyogo 664 Japan.
  - b. Extinguishers: Caesjan Ltd., Saitama, Japan - Automatic operating 3 liter AFFF foam container mounted in vertical position above hazard.
  - c. Ductile Iron Pipe Fittings: Riken Corp., Tohyo, Japan
  - d. Butterfly Valves: Tomce Valve Co. Ltd., Osaka, Japan - 2 to 12 inch size.
  - e. OS&Y Val ves:
    - (1) Nakajima Valve Manufacturing Co., Ltd., Shiga-Ken 522-02 Japan - 2 to 12 inch sizes.
    - (2) Toyo Valve Co., Ltd., Nagamo 392 Japan - 2 1/2 to 12 inch sites.
  - f. Audible Signal Appliances:
    - (1) Hochiki Corp., Tokyo, Japan - vibrating bells.
    - (2) Hobishi Electric Co., Ltd., Tokyo, Japan - bells {strobe and vibrating types }.
  - g. Fire Alarm Control Panels: Nohmi Bosai Ltd., Tokyo, Japan - non-coded panel suitable for service with detectors, manual pull stations and sprinkler waterflow alarm devices.
  - h. Heat Detectors:
    - (1) Hochiki Corp., Tokyo, Japan - combination rate of rise/fixed temperature 135 degrees Fahrenheit.

(2) Matsushita Electric Works Ltd., Mie-Ken 514 Japan - fixed temperature 140 and 158 degrees Fahrenheit.

(3) Nohmi Bosai Ltd., Tokyo 102 Japan - rate of rise.

i. Smoke Detectors:

(1) Hochiki Corp., Tokyo, Japan - ionization and photoelectric smoke detectors.

(2) Nittan Co., Ltd., Tokyo 151 Japan - ionization and photoelectric smoke detectors.

(3) Nohmi Bosai Ltd., Tokyo 102 Japan - ionization and photoelectric smoke detectors plus smoke detector - sensitivity tester.

j. Single and Multiple Station Smoke Detectors: NEC Corp., Tokyo 108 Japan,

k. Speakers and Amplifiers for Fire Alarm Systems:

(1) Kobishi Electric Co., Ltd., Tokyo 114 Japan - speakers.

(2) Marantz Japan Inc., Kanagawa-Ken 228 Japan - speakers and controller.

l. Strobe Light Fire Alarm Devices: Kobishi Electric Co., Ltd., Tokyo 114 Japan.

m. Sprinkler Pipe Hangers: Riken Corp., Tokyo 102 Japan - standard C clamp and special hangers.

n. Fixed Open Spray Nozzles: Nohmi Bosai Ltd., Tokyo 102 Japan.

o. Sprinkler Pipe Fittings

(1) Riken Corp., Tokyo 102 Japan - grooved rubber gasketed fittings elbows, tees and caps 1 inch to 8 inch sizes; malleable-iron fittings- coupling Clinch), plug {1/2 to 2 inch}, reducer; rubber gasketed fittings for dry pipe systems.

- (2) Victaulic Co. of Japan Ltd., Tokyo Japan - couplings cut or rolled.
- p. Sprinkler Heads: Senju Sprinkler Co. Ltd., Tokyo Japan - pendent model A, chrome plated, 162 to 282 degrees Fahrenheit, 1/2 inch orifice.
- q. Sprinkler System Trim, Valves and Drain:
  - (1) Kitt Corp., Tokyo 107 Japan - 1/4 to 2 inch ball valves.
  - (2) Toyo Valve Co., Ltd., Nagano 392 Japan - ball valves (screwed and soldered) 1/2 to 2 inch.



DEPARTMENT OF THE NAVY  
OFFICER IN CHARGE OF CONSTRUCTION  
NAVAL FACILITIES ENGINEERING COMMAND CONTRACTS, FAR EAST  
BOX 61  
FPO SEATTLE 98762-3100

11000  
Ser 90/0248  
19 Mar 90

From: Officer in Charge of Construction, Naval Facilities  
Engineering Command Contracts, Far East

Subj: GUIDANCE LETTER ON ACCEPTANCE OF JAPANESE MANUFACTURED ITEM  
FOR FIRE PROTECTION SYSTEM

Ref: (a) OICC FE ltr 11000 Ser 400F/7012 of 28 Feb 90

Encl: (1) OICC FE ltr 11000 Ser 400F/0247 of 16 Mar 90

1. A major initiative of our new fire protection engineer is to find Japanese equipment and materials-that will meet our fire codes. This information should save you and your A & E's from doing the search yourselves and will let you know upfront what products are and are not acceptable.

2. Please feel free to discuss with Hr. Dinesh K. Patel any proposed local product, not included in reference (a) or in enclosure (1), that you feel is an acceptable substitute for a U. S. item. I would suggest that it's more cost effective to hold that discussion before designs start than during reviews.

3. Look forward to us periodically updating these specifications. The point of contact is Hr. Dinesh K. Patel, PWC Code 400F. Contact him at telephone (AV)234-5101.

  
C. A. RICE  
Deputy

Distribution:  
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Lists II & IV

copy to:  
PACNAVFACENGCOM (Code 408)



DEPARTMENT OF THE NAVY  
OFFICER IN CHARGE OF CONSTRUCTION  
NAVAL FACILITIES ENGINEERING COMMAND CONTRACTS, FAR EAST  
BOX 61  
FPO SEATTLE 98762-3100

11000  
Ser 400F/0247  
16 Mar 90

From: Officer in Charge of Construction, Naval Facilities  
Engineering Command Contracts, Far East

Subj: FIRE PROTECTION SYSTEM EQUIPMENT AND MATERIAL GUIDANCE

Ref: (a) MIL-Handbook-1008A, Fire Protection for Facilities  
Engineering, Design and Construction  
(b) PACNAVFACENGCOM Fire Protection Engineering (Code 408)  
Branch Policies of 31 Oct 88

Encl: (1) Specification Section 15330 Fire Extinguishing Sprinkler  
System (Wet Pipe)  
(2) Specification Section 16722, Fire Alarm System, Local  
Energy Type  
(3) Fire Protection Design Analysis Checklist dated 1 Nov 89

1. Purpose: To provide guidance on use of Japanese manufactured fire protection system equipment and devices, and materials for fire rated walls and doors in new construction and rehabilitation/alteration projects.

2. Background: Reference (a) requires all materials and equipment used in fire protection systems and fire walls and doors to be Underwriter's Laboratory (UL) listed or approved by Factory Material (FM). Currently Japanese manufactured products do not meet these requirements. However some Japanese products meeting Japanese Industrial Standards (JIS) may be considered equivalent in strength and performance to UL listed or FM approved products.

3. Guidance: Information on acceptable substitution for use in the following systems and products is provided:

a. Fire Alarm System: Wiring, conduits and fittings that conform to JIS shall be acceptable substitution. Equipment and devices such as Class A supervised fire alarm control panel, manual pull stations, alarm horns/stroke lights, fire detectors (all types) shall be US procured items.

b. Automatic Sprinkler System: Pipes, fittings valves, hangers and paint that conform to JIS are acceptable substitution. For wet pipe sprinkler system; sprinkler heads, water pressure switch, alarm valve, water flow detector, water motor alarm and valve tamper switches shall be US procured. For dry pipe, pre-action and deluge sprinkler system; sprinkler heads, automatic air maintenance devices, all types of fire detection devices and control panels, dry pipe/pre-action deluge valves, low air pressure switches and valves tamper switches shall be US procured.

ENCLOSURE (1)

Subj: FIRE PROTECTION SYSTEM EQUIPMENT AND MATERIAL GUIDANCE

c. Firewalls (1-hr and 2-hr rated walls only):

(1) Two layers of 15 mm of Japanese gypsum board, conforming to JIS A 6913-81 on each side of wood or metal studs is acceptable for one-hour fire resistance rating requirements.

(2) Two layers of 21 mm of Japanese gypsum board, conforming to JIS A 6913-81 on each side of wood or metal studs is acceptable for 2 hour of fire resistance rating requirements.

d. Firedoors: Japanese manufactured, "KOHSHU" or "OTSUSHU BOHKA DO" doors and tested in accordance with JIS 1311-75 with metal frames is acceptable in place of 45 min thru 90 min UL labeled fire doors and frames. The size of fire rated vision panels in these fire doors shall not exceed the requirements of N.F.P.A 80.

4. Action: Guidance provided above and in reference (b) are to be used for all construction, alteration and repair projects. Enclosures (1) and (2) shall be used in preparation of specification for wet pipe sprinkler system (section 15330) and fire alarm system (section 16722) for projects requiring such fire protection systems. Enclosure (3) is a checklist to aid designers in considering the fire protection features or systems which may be required for each project.

5. Point of Contact: Point of contact for Fire Protection Engineering guidance is Mr. Dinesh K. Patel (Code 400F) telephone (AV) 234-5101, or commercial 0468-26-1911, extension 5101. Our twenty four hour FAX system may be reached by (AV) 234-7098, or commercial 0468-26-1911, extension 7098.

  
C. A. RICE  
Deputy

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SUBJ: CLASSIFICATION OF REPAIR WORK FOR FACILITIES PROJECTS  
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REF/A/DOC/OPNAVINST 11010.20E/09JUL85//  
APPN/REF A IS FACILITIES PROJECTS MANUAL//  
BPKS/1. THE FOLLOWING GUIDANCE IS PROVIDED TO CLARIFY AND EXPAND THE  
DEFINITION OF REPAIR FOR FACILITIES PROJECTS.

2. REPAIR IS DEFINED AS: THE RESTORATION OF A REAL PROPERTY FACILITY  
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A. REPAIRS MAY INCLUDE MODIFICATION OR ADDITION OF INTERIOR  
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COMPLIANCE WITH CURRENT LIFE SAFETY STANDARDS, CODES, OR  
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- (2) INSTALLING FIRE PROTECTION; AND
- (3) REMOVAL OF ASBESTOS MATERIAL, TRANSFORMERS CONTAINING PCB,  
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B. REPAIR DOES NOT INCLUDE ADDITIONS, EXPANSIONS, ALTERATIONS OR  
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31 MARCH 1988

MILITARY HANDBOOK

FIRE PROTECTION FOR FACILITIES  
ENGINEERING, DESIGN, AND CONSTRUCTION

AMSC N/A

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ABSTRACT

This handbook was produced to provide detailed guidance for the incorporation of fire protection engineering measures in the design and construction of Department of Defense (DOD) facilities engineering. Concerns for property, equipment, and personnel were among the comprehensive considerations included in this handbook to ensure safety of human life and continuity of mission, and to minimize injuries and damage to property and equipment.

FOREWORD

This handbook has been developed from an evaluation of facilities at DOD establishments, from surveys of the availability of new material and construction methods, and from selection of the best design practices of the Naval Facilities Engineering Command (NAVFACENGCOM), Army Corps of Engineers, Air Force Office of the Civil Engineer, Deputy Chief of Staff for Installations and Logistics Headquarters Marine Corps, other Government agencies, and the private sector. This handbook was prepared using, to the maximum extent feasible, model building codes, National Fire Codes, industrial standards, and other recognized standards. Do not deviate from this criteria in the planning, engineering, design, and construction of DOD facilities without prior approval of the respective component office of responsibility-- U.S. Army, HQ USACE/CEMP-E; U.S. Navy, NAVFACENGCOM HQ Code 150; U.S. Marine Corps, HQMC Code LFF-1; U.S. Air Force, HQ AFCESA/DFE; Defense Logistics Agency (DLA), HQ DLA-D through DLA-MMDI; Defense Mapping Agency (DMA), HQ DMA(HRH); and all other DOD components, ADUSD (ES) Conservations and Installations via the DOD Standing Committee on Fire Protection Engineering.

Recommendations for improvement are encouraged. Submit recommendations for approval via the respective component office of responsibility and the DOD Standing Committee on Fire Protection Engineering. Approved recommendations will be forwarded to Commander, Naval Facilities Engineering Command (NAVFACENGCOM) (Code 150), 200 Stovall Street, Alexandria, VA 22332-2300; telephone commercial (703) 325-0036, DSN 221-0036; fax commercial (703) 325-4450, DSN 221-4450.

THIS HANDBOOK SHALL NOT BE USED AS A REFERENCE DOCUMENT FOR PROCUREMENT OF FACILITIES CONSTRUCTION. IT IS TO BE USED IN THE PURCHASE OF FACILITIES ENGINEERING CRITERIA MANUALS. DO NOT REFERENCE IT IN MILITARY OR FEDERAL SPECIFICATIONS OR OTHER PROCUREMENT DOCUMENTS.

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FIRE PROTECTION CRITERIA MANUALS

Criteria Manual	Title	PA
MIL-HDBK-1008B	Fire Protection for Facilities	NAVFAC HQ

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Section 1: INTRODUCTION

1.1 Scope. This military handbook, MIL-HDBK-1008B, establishes fire protection engineering policy and criteria for DOD components. The provisions of this handbook are applicable to DOD facilities located on or outside of DOD installations, whether acquired or leased, by appropriated or non-appropriated funds, or third party financed and constructed. Provisions of this handbook also apply to alterations of existing structures and to nonpermanent construction. Facilities covered by this document include all types of buildings and their contents, structures, whether considered temporary or permanent, mobile and stationary equipment, waterfront facilities, outside storage, and shore protection for ships and aircraft. Matters relating to fire department operations, staffing, and equipment are not covered by this handbook.

1.2 Cancellation. This handbook cancels and supersedes MIL-HDBK-1008A, Fire Protection for Facilities Engineering, Design, and Construction, dated 31 March 1988; AFR 88-15, Criteria and Standards for Air Force Construction (Draft), December 1985, Section C, Types of Construction, pars. 1-45 through 1-61 and Section H, Fire Protection, pars. 15-8, and 15-58 through 15-97; and AFM 88-15, Criteria and Standards for Air Force January 1975, Chapter 13, Fire Protection. The following Design Policy Letters are cancelled upon adoption of this handbook:

- 1.) DPL-89-0009 Fire Protection for Waterfront Brigs
- 2.) DPL-89-0004 Aircraft Corrosion Control Hangars, Interim Design Guidance
- 3.) DPL-88-0008 Use of Radioluminescent Signs and Markers
- 4.) DPL-88-0007 Liquid Oxygen/Nitrogen Facilities, Safety Clearances
- 5.) DPL-88-0006 Occupancy Classification of Health Care Facilities
- 6.) DPL-88-0003 Electrical Equipment Installed in Areas Subject to Water Discharge from Deluge Sprinkler Systems
- 7.) DPL-88-0002 Halon Fire Extinguishing Agents
- 8.) DPL-87-0002 Use of Plastic or PVC Conduit for Electrical Construction Materials

1.3 Criteria. Fire protection criteria shall conform to the requirements of this handbook, the National Fire Codes, published by the National Fire Protection Association (NFPA), except as modified herein, and portions of the Uniform Building Code (UBC), published by the International Conference of Building Officials, as specifically referenced herein. Additional criteria includes portions of the Loss Prevention Data Sheets, published by Factory Mutual Engineering Corporation (FM), as specifically referenced herein. Buildings which are required to be accessible to the disabled or impaired shall meet the provisions of Federal Standard FED-STD-795, Uniform Federal Accessibility Standards (UFAS), and the Americans with Disabilities Act (ADA) of 1990.

1.3.1 Renovation. This handbook also applies to renovation, modernization, and rehabilitation work. To the extent possible, renovation, modernization, and rehabilitation work shall comply with the requirements for new construction outlined in this handbook.

1.3.2 Existing Facilities. Existing facilities which are acceptable to the authority having jurisdiction, and meet the requirements of NFPA 101, Safety to Life From Fire in Buildings and Structures, for existing occupancies do not have to be modified to comply with the provisions of this handbook. However, if the facilities are renovated, modernized, or rehabilitated, the facilities shall meet the requirements for new construction as specified in this handbook.

1.3.3 Absence of Criteria. When a specific application is not covered by the criteria cited herein, follow national building codes, recognized industry standards, and standard engineering practices. In the absence of such technical information, contact the DOD component authority having jurisdiction (refer to par. 1.3.5).

1.3.4 Conflicts in Criteria. If a conflict exists between this handbook and any other DOD document, referenced code, standard, or publication, this handbook shall take precedence. The individual DOD components may issue technical guidance which shall take precedence. The Army and Air Force issue Engineering Technical Letters (ETLs); the Navy issues Design Policy Letters (DPLs); and the Defence Logistic Agency (DLA) issues Technical Policies.

1.3.5 Authority Having Jurisdiction (AHJ). The term "AHJ" as used in the codes and standards referenced in this handbook shall mean the component office of responsibility, i.e., U.S. Army, HQ USACE/CEMP-E; U.S. Navy, NAVFACENCOM HQ Code 150; U.S. Marine Corps, HQMC Code LFF-1; U.S. Air Force, HQ AFCEA/DFE; Defense Logistics Agency (DLA), HQ DLA-D through DLA-MMDI; Defense Mapping Agency (DMA), HQ DMA(HRH); and all other DOD components, ADUSD (ES) Conservations and Installations via the DOD Standing Committee on Fire Protection Engineering.

1.3.6 Waivers. Where a valid need exists, waivers for deviation from established criteria may be approved by the AHJ, if an alternate fire protection engineering design providing equivalent fire protection and life safety is approved. Requests for approval shall include justification, hazard analysis, cost comparison, criteria used, and other pertinent data. Lack of funds or cost savings are not considered sufficient justification for deviation from established criteria. Waivers shall apply only to specific requests under consideration and not to cases with similar circumstances.

1.3.7 Guide Specifications. Guide specifications which are issued and approved by the DOD components shall be used in the procurement of new facilities and processes, as well as modernization, renovation, and repair work on existing facilities. The guide specifications include design criteria which is not specifically addressed in this handbook.

1.4 Design Analyses. A fire protection design analysis is required for all designs and shall address the fire protection requirements of the project as required by this handbook. The fire protection design analysis shall be summarized and submitted separate from other disciplines. Where applicable, the following minimum fire protection provisions shall be discussed:

- a) Type of construction,
- b) Height and area limitations,
- c) Classification of occupancy,
- d) Building separation or exposure protection,
- e) Specific compliance with MIL-HDBK-1008B and National Fire Codes,
- f) Requirements for fire-rated walls, fire-rated doors, fire dampers with their fire-resistive ratings,
- g) NFPA 101,
- h) Analysis of automatic suppression systems and protected areas,
- i) Water supplies,
- j) Smoke control systems,
- k) Fire alarm system (the type of alarm system and location of the fire alarm equipment and fire zones),
  - l) Fire detection system (the type of detection system and location of detectors and fire zones),
  - m) Standpipe systems and fire extinguishers,
  - n) Interior finish ratings,
  - o) Connection to and description of base fire alarm reporting system.

Note: When directed by the cognizant fire protection engineer, projects with little or no fire protection considerations shall not require a fire protection design analysis.

1.5 Services and Qualifications of Fire Protection Engineers. Major projects require the services and review of a qualified fire protection engineer. In addition, projects which involve design or modification of fire detection, fire suppression, or life safety systems shall require the services

and review of a qualified fire protection engineer. A qualified fire protection engineer shall be an integral part of the design team, and shall be involved in every aspect of the design as it relates to fire protection. This includes, but is not limited to, building code analysis, life safety code analysis, design of automatic detection and suppression systems, water supply analysis, and a multi-discipline review of the entire project. For the purposes of meeting this requirement, a qualified fire protection engineer is defined as an individual meeting one of the following conditions:

a) An engineer having a Bachelor of Science or Masters of Science Degree in Fire Protection Engineering from an accredited university engineering program, plus a minimum of 2 years' work experience in fire protection engineering.

b) A registered professional engineer (P.E.) in fire protection engineering.

c) A registered PE in a related engineering discipline and member grade status in the National Society of Fire Protection Engineers.

d) An engineer with a minimum of 10 years' experience in fire protection engineering and member grade status in the National Society of Fire Protection Engineers.

e) A registered architect (R.A.) with member grade status in the National Society of Fire Protection Engineers. Services of the R.A. shall be limited to building code applications and the life safety code analysis.

1.6 Fire Protection During Construction. Contract specifications shall reference the Army Corps of Engineering Manual (EM), EM 385-1-1, Safety and Health Requirements Manual, and NFPA 241, Safeguarding Construction, Alteration, and Demolition Operations, and shall contain the requirement that the activity's fire regulations be followed.

#### 1.7 Definitions

1.7.1 Combustible Material. Combustible material is material which cannot be classified as noncombustible in accordance with that definition.

1.7.2 Fire Resistance Rating. Fire resistance rating is the time that the construction will withstand the standard fire exposure as determined by the American Society for Testing and Materials (ASTM), ASTM E119, Fire Tests of Building Construction and Materials.

1.7.3 Flame-Spread Rating. Flame-spread rating is a numerical classification determined by ASTM E84, Surface Burning Characteristics of Building Materials, which indexes the relative burning behavior of a material by quantifying the spread of flame in a test specimen. The flame-spread rating of the material is not a measure of its fire resistance.



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1.7.4 Interior Finish. Interior finish is defined as the exposed material of walls, ceilings, movable partitions, wainscoting, columns, other interior surfaces of a building, and other interior materials applied to these surfaces. Exposed insulating and acoustical materials are considered interior finish.

1.7.5 Multi-family Housing. Multi-family housing is defined as more than two dwelling units under one roof. Town house style units separated by 2-hour fire-rated walls are considered multiple single family dwellings, not multi-family dwellings.

1.7.6 Noncombustible Material. Noncombustible materials are those which will not ignite, burn, support combustion, or release flammable vapors when subject to heat or fire. Building materials that are reported as passing ASTM E136, Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C, shall be considered noncombustible.

1.7.7 Smoke-Developed Rating. Smoke-developed rating is a numerical classification determined by ASTM E84, which indexes the smoke generation rate of a given material to those of two standard materials, asbestos-cement board and select grade red oak.

1.7.8 Underground Structures. Underground structures shall be as defined by NFPA 101.

1.7.9 Windowless Structures. Windowless structures shall be as defined by NFPA 101.

Section 2: BUILDING CONSTRUCTION

2.1 Basic Criteria. Building construction shall conform to fire resistance requirements, allowable floor area, building height limitations, and building separation distance requirements of the UBC. Other requirements of the UBC are not considered criteria but may be used as a guide when established criteria does not address a specific situation.

2.1.1 Egress and Safety to Life. Building construction related to egress and safety to life shall comply with NFPA 101. Conflicts between the UBC and NFPA 101 related to fire resistance rating shall conform to NFPA 101 and applicable criteria contained herein. Appendix A provides a cross reference between the construction types referenced in NFPA 220, Types of Building Construction and the UBC.

2.1.2 Partitions. The UBC fire resistance requirements for permanent partitions shall not apply to non-bearing partitions in Type I and Type II construction. Fire resistance ratings of non-bearing partitions in Type I and Type II construction shall comply with NFPA 101.

2.1.3 Type of Construction. New buildings shall be limited to noncombustible construction (UBC Type I or Type II), except as listed below and modified herein. For additional construction requirements for medical facilities, refer to par. 4.4.

Exception 1: Occupancy Groups B, M, and R-3 as defined by the UBC may consist of Types III, IV, or V construction if the total floor area does not exceed 8,000 square feet. Allowable area increases are not permitted.

Exception 2: Navy and Marine Corps child development centers may be of Type V construction if protected by automatic sprinklers.

Exception 3: Navy apartment-style bachelors' quarters may be Type V One-hour construction.

2.1.4 Separation Between Buildings. Use the UBC to determine required separation distances between buildings. These distances are contingent upon the fire resistance ratings of the exterior walls and the openings in these walls.

2.2 Fire Areas. Fire areas shall conform to the UBC, except as modified herein. Exceptions for specific occupancies are listed in Section 4 of this handbook.

Note: The Air Force permits the allowable area to triple in any building when an approved automatic sprinkler system is installed, regardless of building height or area.

2.2.1 Unsprinklered Attics and Suspended Ceilings. Buildings with an attic(s) separated from all other areas of the building by two-hour fire rated construction, are not required to adhere to the criteria of this paragraph. Draft stops of gypsum board on wood or metal frame are required in unsprinklered attic spaces of combustible roof construction or in the unsprinklered combustible suspended ceiling spaces to divide the spaces into areas not exceeding 3,000 square feet (280 m<sup>2</sup>). Self closing and latching access doors of similar construction shall be provided in the draft stop where there is no other means of access to the area.

2.3 Building Height Limitations. Building height limitations shall conform to the UBC, except as modified herein.

2.4 Special Requirements. Certain structures shall meet the following special requirements:

a) House trailers shall be separated in accordance with NFPA 501A, Fire Safety Criteria for Manufactured Home Installations, Sites, and Communities.

b) Relocatable or prefabricated structures used for other than family dwellings shall be separated in accordance with the UBC requirements for permanent buildings.

c) Relocatable facilities such as electronic equipment vans shall not be grouped to form areas greater than 6,000 square feet (557.4 m<sup>2</sup>) for unsprinklered facilities and 12,000 square feet (1114.8 m<sup>2</sup>) for sprinklered facilities. Relocatable facilities having extra hazardous occupancies as defined by NFPA 13, Installation of Sprinkler Systems, shall not be grouped to form areas greater than 4,000 square feet (372 m<sup>2</sup>) for unsprinklered facilities and 8,000 square feet (743 m<sup>2</sup>) for sprinklered facilities. A minimum separation of 50 feet (15 m) shall be provided between groups for extra hazardous and 15 feet (5 m) for all other groups.

2.5 Limiting Interior Fire Spread

2.5.1 Vertical Fire Cutoffs. Enclosures for stairways, elevators, ducts, chases, etc., shall be in accordance with the most current edition of the following criteria:

- a) NFPA 80, Fire Doors and Fire Windows
- b) NFPA 90A, Installation of Air Conditioning and Ventilating Systems
- c) NFPA 90B, Installation of Warm Air Heating and Air Conditioning Systems
- d) NFPA 91, Exhaust Systems for Air Conveying of Materials

e) NFPA 96, Installation of Equipment for the Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment

f) NFPA 101

g) NFPA 211, Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances

h) NFPA 220, Types of Building Construction

Where cables, conduit, telephone wire, ducts, etc., penetrate floors or fire walls, fire stops shall be provided. Fire stops shall be by an assembly tested in accordance with ASTM E814, Fire Tests of Through-Penetration Fire Stops, and shall have a rating equal to the fire resistance rating of the assembly being penetrated.

2.5.2 Protection of Door Openings. Door openings shall be protected in accordance with NFPA 80. Fire door assemblies are required on each side of the door opening in 4-hour fire walls when openings are fitted with 3-hour rolling or sliding fire doors. Fire doors shall be listed by Underwriters Laboratory (UL), FM, or a nationally recognized testing laboratory (NRTL). Approved fire doors shall not be modified in the field. Local fabrication of fire doors shall not be permitted. The protection of ducts at point of passage through fire walls shall be in accordance with NFPA 90A and/or NFPA 90B.

2.6 Means of Egress

2.6.1 Requirements. Facilities shall comply with the requirements of NFPA 101, except as modified herein.

2.6.2 Means of Egress Marking. The marking of means of egress shall be in accordance with NFPA 101. Signs shall have lettering on a opaque background. Internally illuminated signs shall be either light emitting diodes (LED), fluorescent fixtures, or neon fixtures. Incandescent fixtures are not permitted except in locations where other types of signs are not permitted due to environmental considerations. Existing incandescent fixtures may remain in use. In overseas locations, additional markings may be required to remain consistent with local national standards.

Note: LED signs are preferred.

Exception: In overseas locations, colors may be consistent with local national standards, and bilingual signs are permitted. The appropriate service or agency fire protection engineer shall publish a formal policy to implement this exception.

2.6.2.1 Radioluminous Exit Signs. Use of radioluminous exit signs in DOD facilities is not permitted without the express written approval of the AHJ.

Requests for approval must demonstrate that procedures, in accordance with the component radiological health and safety regulations, are in place to track and control inventory, to remove and replace devices at the end of their useful life, to identify, evaluate, and decontaminate leaking or broken devices, and to properly dispose of the devices once they are removed. Use radioluminous signs and markers only in cases where the user has clearly demonstrated the unique requirement for such devices (e.g., electrical power is not available, long distances of wire and conduit make the installation of conventional devices impractical, or where explosive environments exist).

## 2.7 Interior Finish

2.7.1 New Construction, Alterations, Renovations. Wall and ceiling finishes and movable partitions shall conform to the requirements of NFPA 101, except as follows:

a) Interior finish for means of egress, hospital patient rooms, sleeping rooms, and correction facilities shall be Class A only. Class B interior finish may be substituted for Class A interior finish throughout health care facilities that are completely protected with automatic sprinklers and that have quick response sprinklers installed throughout smoke compartments containing sleeping rooms.

b) Flame spread (FS) and smoke development (SD) shall be tested in accordance with ASTM E84 (NFPA 255). Tests shall not exceed FS rating of 25 and SD rating of 50 for Class A materials, FS rating of 75 and SD rating of 100 for Class B materials, and FS rating of 200 and SD rating of 200 for Class C materials. Class C interior finish shall only be permitted in fully sprinklered buildings.

c) Cellular plastics shall not be used as interior wall and ceiling materials. Drop-out ceilings (foam-grid panels) may be used in existing buildings if they are listed by a NRTL for installation under automatic sprinkler systems. Drop-out ceilings shall be installed in strict accordance with testing laboratory instructions; and automatic sprinklers shall be installed above the panels. Where new automatic sprinklers are installed in an existing building, drop-out ceilings shall not be used. Drop-out ceilings shall not be used in new buildings. Drop-out panels shall not be installed above sprinkler systems.

d) For incidental trim, refer to NFPA 101.

e) Carpeting and other textile wall coverings shall only be applied as an interior finish if the material passes the acceptance criteria of the UBC Standard 42-2, Test Method for Textile Wall Coverings, conducted by a NRTL.

Exception: Carpeting and other textile wall coverings which have passed ASTM E84 may be used as an interior finish in

buildings with complete automatic sprinkler protection.

2.7.2 Existing Construction. In the case of combustibles interior finishes in existing buildings, certain basic safeguards are essential. The following alternate measures are available to provide the necessary safeguards to protect life and property against fires:

- a) Cover combustibles surfaces with gypsum board or other materials meeting the requirements of par. 2.7.1; or
- b) Protect the building with an automatic sprinkler system; or
- c) Remove and replace with an approved material.

2.7.3 Interior Floor Finish. Interior floor finishes shall conform to the requirements of NFPA 101.

## 2.8 Insulation

2.8.1 Requirements. Thermal and acoustical insulation shall have a FS rating not higher than 75, and a SD rating not higher than 150 when tested in accordance with ASTM E84 (NFPA 255). Cellular plastic insulation shall be tested in the same densities and thicknesses as the material that will be used in construction applications.

2.8.2 Exceptions to Insulation Criteria. For certain types of insulation installation, the exceptions described in pars. 2.8.2.1 and 2.8.2.2 shall apply.

2.8.2.1 Flame Spread - No Smoke Limitation. Compliance with the SD limitation is not required, and a FS rating up to 100 is permitted for insulation, including insulating sheathing installed within wall assemblies. In such installations, the interior finish materials shall conform to par. 2.7 and shall have a minimum fire-resistance rating of 15 minutes when tested in accordance with ASTM E119.

2.8.2.2 No Flame Spread or Smoke Limitation. Compliance with FS and SD limitations are not required for the following applications:

- a) Insulation installed above poured concrete or poured gypsum roof decks, nominal 2-inch (50.8 mm) thick tongue-and-groove wood plank roof decks, or precast roof deck panels or planks that are approved by a NRTL, as noncombustible roof deck construction.

- b) Insulation installed above roof decks where the entire roof construction assembly, including the insulation, is UL listed as Fire Classified, or FM approved for Class I roof deck construction or equal listing or classification by a NRTL.

c) Insulation contained entirely within panels where the entire panel assembly used in the construction application meets the cited FS and SD limitations.

d) Insulation isolated from the interior of the building by masonry walls, masonry cavity walls, insulation encased in masonry cores, or concrete floors.

e) Insulation installed over concrete floor slabs and completely covered by wood tongue-and-groove flooring without creating air spaces within the flooring system.

f) Insulation completely enclosed in hollow metal doors.

g) Insulation installed between new exterior siding materials and existing exterior siding or wood board, plywood, fiberboard, or gypsum exterior wall sheathing.

Note: The exception to SD limitations described in this paragraph is not applicable to hospitals and correctional facilities.

## 2.9 Roof Coverings and Roof Deck Assemblies

2.9.1 Roof Coverings. Roof coverings shall be approved and listed by a NRTL. The UL Building Materials Directory lists three Classes (A, B, and C) of acceptable roof coverings based on compliance with UL 790, Safety Tests for Fire Resistance of Roof Covering Materials and NFPA 256, Fire Tests of Roof Coverings. Class C roof coverings shall be restricted to housing and buildings under 8,000 square feet (743.5 m<sup>2</sup>) and which are not mission essential. In congested areas, the AHJ may want to stipulate Class A roof coverings as defined by UL 790 and NFPA 256.

2.9.2 Roof Deck Assemblies. Roof deck assemblies shall be FM Class I approved, or UL listed as Fire Classified or equal listing or classification by a NRTL.

Exception 1: Fully sprinklered buildings.

Exception 2: Buildings under 8,000 square feet (743.5 m<sup>2</sup>).

## 2.10 Roof Access for Manual Fire Fighting

2.10.1 Fire Fighting Access to Roof. Required interior stair towers which extend to the top floor in any building three or more stories in height shall have, at the highest point of the stair tower, an approved hatch opening to the exterior with an appropriate ladder. The hatch shall be not less than 16 square feet in area, with a minimum dimension of 2 feet (0.61 m). At least one stairway shall terminate at a standard door opening leading onto the roof surface, unless the roof has a slope greater than 4 in 12.

2.11 Fire Department Vehicle Access. Site selection for new facilities shall consider fire department vehicle access. New facilities four stories or more in height shall be provided with suitable all weather ground access surface for aerial apparatus on a minimum of two sides of the perimeter of the structure.

2.11.1 Fire Department Connection. Facilities with fire department connections for sprinkler or standpipe systems shall be provided with suitable all weather ground access surface for pumper apparatus within 150 feet (45.72 m) of such fire department connections.

2.12 Air Handling

2.12.1 Design Requirements. Air handling, heating, ventilation, and exhaust systems shall meet the design requirements of the following, except as modified herein:

a) NFPA 75, Protection of Electronic Computer/Data Processing Equipment

b) NFPA 90A

c) NFPA 90B

d) NFPA 91

e) NFPA 96

f) NFPA 101

2.12.2 Corridors. Corridors shall not be used in lieu of duct for air handling supply or return.

2.12.3 Plenums. Plenums may be used as an integral part of an air handling system only if they conform to the requirements of NFPA 90A. Under no circumstances may combustible materials be located within the plenum space. Electrical wiring passing through the space, including telephone and communication wiring, shall be approved for that type of environment or shall be in metal conduit. Rooms or areas which form a plenum space or which are used as a plenum shall not be occupied for any purpose except during repairs or maintenance operations to the air handling equipment.

2.12.4 Duct Smoke Detectors. Provide duct smoke detectors in accordance with NFPA 90A and NFPA 90B.

Exception: Existing facilities without duct detectors.

2.12.5 Fire Dampers. Provide fire dampers in accordance with NFPA 90A and NFPA 90B.



2.12.6 Smoke and Heat Vents. Smoke and heat vents should be provided in buildings where a high rate of heat release is anticipated during a fire. When required in buildings without automatic sprinklers, smoke and heat vents shall be arranged to operate automatically in accordance with NFPA 204M, Smoke and Heat Venting. When required in buildings with automatic sprinkler protection, smoke and heat vents shall be arranged to operate in the manual mode only. In buildings with automatic sprinkler protection, skylights are the preferred method of providing manual smoke and heat vents.

### 2.13 Plastic Pipe and Conduit

2.13.1 Penetrations. Penetrations by plastic pipe or conduit through fire-rated walls, partitions, shafts, and floors shall be fire-stopped by an approved or listed method in accordance with ASTM E814 or UL 1479, Safety Fire Tests of Through-Penetration Firestops.

2.13.2 Prohibited Locations. Plastic pipe and conduit shall not be installed in exit stair enclosures, or in air plenum spaces unless specifically listed for that application.

### 2.14 Fire Retardant Treated (FRT) Plywood

2.14.1 New Construction. Use of FRT plywood is prohibited, except as permitted by the UBC. FRT plywood shall not be used in any part of the roof or roofing system.

2.14.2 Existing Construction. FRT plywood installations should be regularly inspected for structural integrity. Replacement of damaged FRT plywood may require additional fire protection measures if FRT plywood is replaced with more combustible materials.

Section 3: COMMON HAZARDS

3.1 Heating Equipment

3.1.1 Requirements. Designs shall conform to one or more of the following criteria:

- a) NFPA 31, Installation of Oil-Burning Equipment
- b) NFPA 54, National Fuel Gas Code
- c) NFPA 58, Storage and Handling of Liquefied Petroleum Gases
- d) NFPA 85C, Prevention of Furnace Explosions/Implosions in Multiple Burner Boiler-Furnaces
- e) NFPA 211, Chimneys, Fireplaces, Vents and Solid Fuel Burning Appliances

3.1.2 Gas. Gas service mains shall be installed in accordance with NFPA 54. Gas service mains shall not be permitted within the perimeter of foundation lines. Natural draft cross ventilation shall be provided for building crawl spaces containing gas service piping. Supply connections from the gas service mains shall rise above grade outside the foundation wall and pass through a full swing joint or loop of metallic tubing before entering the building. This will avoid pipe rupture in the event of differential settlement or earthquake. Pressure regulators shall be located outside of buildings or vented to the outside. Standards for heating system components common to all fuel systems are provided in NFPA 211. Related information is also available in the UBC. Heating system devices shall be listed by a NRTL.

3.1.3 Coal

3.1.3.1 Storage. Locate coal storage to comply with the following restrictions:

a) Do not locate coal storage in an area where contact with an external heat source is possible. Avoid locating storage near piping, flues, boiler walls, and over steam mains, even if buried. Coal shall not be stored over or under fire service mains. Maintain a separation distance of at least 20 feet from any fire service main.

b) Coal shall not be piled over manhole covers or covered pipe trenches that might allow air to find its way into the pile. Piles of coal shall not be arranged around or be in contact with timbers, columns, or large pipes, as air may pass along these surfaces and produce a flue effect. Coal piles shall not be vented with pipes or flues.

c) Low-grade coal shall not be piled higher than 10 feet (3 m) and

best grade coal not higher than 15 feet (4.5 m), unless they are piled by roll-packing method. Locate yard piles at least 50 feet (7.6 m) from other combustibles and important structures.

d) Coal bins, silos, or bunkers shall be constructed entirely of noncombustible material, preferably concrete. The structure should be roofed over to keep out rain and snow, and the space above the coal sufficiently ventilated to prevent the accumulation of gases given off by the coal. An elevated cone-shaped bin in which the coal is fed at the top and removed at the bottom is recommended. This arrangement prevents fine materials from collecting and remaining in the bin for long periods. The coal at the bottom, which is most likely to be troublesome, is the first to be removed. Coal bins, and when possible, bunkers and silos, should be emptied during the summer shutdowns and other prolonged idle periods. Provide automatic sprinkler protection if the existing storage facility has combustible construction or occupancy other than coal. Provide access openings for manual fire fighting operations.

e) Inactive coal piles, regardless of height are to be compacted to prevent spontaneous heating.

3.1.3.2 Handling. Where combustible conveyor belts are used to transport coal, the following shall be provided:

a) An automatic sprinkler system. It shall be hydraulically designed to operate 10 automatic sprinklers and 2 hand-held hose lines (e.g., two 1-1/2-inch hose lines). Sprinkler spacing should be 100 square feet (9.3 m<sup>2</sup>) per head. The system should be designed for a flowing pressure of 10 psi (70 Kpa) on the end sprinkler. Water supply should be adequate for at least one-hour duration. Systems should be interlocked with the belt drive to shut down on sprinkler water flow. In a conveyor enclosure less than 15 feet (4.6 m) wide, install a single line of sprinklers.

b) Provide either 1-1/2-inch hose lines or hydrants at suitable intervals such that the entire belt is accessible for fire fighting.

c) Provide each conveyor belt system with tamperproof devices arranged to automatically shut off driving power in the event of greater than 20 percent belt slow down or misalignment of belts. Interlocking devices should also shut off power to contributing conveyors.

3.1.3.3 Pulverizing Equipment. Components of a pulverized fuel system shall be designed and constructed in accordance with requirements of NFPA 8503, Pulverized Fuel Systems.

## 3.2 Power Generating and Utilization Equipment

3.2.1 General. In general, electrical installations shall conform to NFPA 70, National Electrical Code. Specific details on the hazards of internal

combustion engines, gas turbines, generators, and transformers are covered in the NFPA Fire Protection Handbook and the FM Loss Prevention Data Sheets.

3.2.2 Stationary Combustion Engines, Gas Turbines, and Generators. Installation of internal combustion engines, gas turbines, and generators shall follow the requirements of NFPA 37, Installation and Use of Stationary Combustion Engines and Gas Turbines, except as modified herein.

3.2.2.1 Units Under 25,000 Horsepower (18.65 MW). In buildings without automatic sprinkler protection, enclose these units with 2-hour fire resistive construction or protect locally with automatic sprinklers. Automatic sprinklers connected to domestic water supplies are acceptable in accordance with NFPA 13.

3.2.2.2 Units 25,000 Horsepower and Larger (18.65 MW). In buildings without automatic sprinkler protection, enclose with 2-hour fire resistive construction and protect locally with automatic sprinklers. Automatic sprinklers connected to domestic water supplies are acceptable in accordance with NFPA 13.

3.2.3 Transformers

3.2.3.1 Requirements. Transformers shall be installed and located in accordance with NFPA 70, except as modified herein.

3.2.3.2 Outdoor Oil-Insulated Transformers. Table 3.2.3.2 provides fire protection requirements for single-phase or poly-phase outdoor oil-insulated transformers.

3.2.3.2.1 Location of Outdoor Oil-Insulated Transformers. Buildings located 25 feet (8 m) or more from an oil-insulated transformer do not require fire exposure protection. Buildings within 25 feet (8 m) of a transformer require exposure protection by one of the following methods:

a) Protect transformers with a permanently piped water spray system.

b) Where transformers expose only one building of masonry or concrete construction, the following safeguards shall be provided where applicable:

(1) There shall be no window openings in first story walls within a horizontal distance of 10 feet (3 m) from the transformers. Existing window openings shall be closed using brick or concrete block.

(2) Window openings in the first story beyond 10 feet (3 m) and up to 25 feet (7.5 m) horizontally from the transformers shall be protected, using either wired glass in steel sash or glass block.

Table 3.2.3.2  
 Fire Protection for Outdoor Oil-Insulated Transformers

SIZE (EACH TRANSFORMER)	NUMBER	PROTECTION
Under 9,999 kVA	One or more	Portable Extinguishers
10,000 - 99,999 kVA <sup>L1</sup>	One only	Hydrant Protection
10,000 - 99,999 kVA <sup>L1</sup>	More than one	a. Provide a 25 ft (8 m) minimum clear space between units, or b. Noncombustible barriers between units, or c. Fixed automatic water spray 100,000 kVA and above. One or more fixed automatic water sprays
100,000 kVA and above	One or more	Fixed automatic water spray

<sup>L1</sup> Where there are mission-essential bus structures exposed to possible transformer oil fire, or electric service or production could be interrupted for an extended period, a fixed automatic water spray system shall be provided to minimize the physical damage from fire and reduce the downtime for repairs.

(3) Window openings in second and third story walls directly above the transformers shall be protected using either wired glass in steel sash or glass block.

(4) Overhanging eaves, where they exist, shall be noncombustible.

c) Where transformers expose a building having walls other than masonry or concrete, provide a masonry or concrete barrier between the building and transformers, with wing walls at each end of the barrier. The barrier shall extend at least 1 foot (0.3 m) above the top of transformer bushings and pressure-relief vents. Wing walls shall be of the same height and shall extend horizontally 2 to 3 feet (0.6 to 0.9 m) beyond the transformers, including any radiators and tap-changer enclosures. At multistory buildings, provide a fire resistive roof on this three-sided transformer enclosure.

d) Where transformers expose more than one building, such as transformers located in courts or angles between buildings, or where yard space is limited, they shall be enclosed in a suitable fire resistive vault and protected as given in Table 3.2.3.2.1.

Table 3.2.3.2.1  
Fire Protection for Oil-Insulated Transformers in Fire-Resistive Vaults

SIZE (EACH TRANSFORMER)	NUMBER	PROTECTION
50,000 kVA and below	One or more not exceeding 50,000 kVA total	Hydrant Protection
50,000 kVA and below	More than one exceeding 50,000 kVA total	Automatic Sprinkler or water spray systems
Over 50,000 kVA	One or more	Automatic sprinkler or water spray systems

e) Where transformers are located on or above noncombustible roofs, suitable curbed and drained concrete mats or welded steel pans shall be underneath units and located so as to not expose roof structures. Oil-filled transformers shall not be installed on combustible roofs.

Exception: Existing carbon dioxide systems.

3.2.3.3 Indoor Oil-Insulated Transformers. Oil-insulated transformers installed indoors shall be located in fire resistive vaults except for indoor transformer installations exempted by NFPA 70. Fire protection shall be provided in accordance with Table 3.2.3.2.1. Requirements apply to single-phase or polyphase lighting or power transformers.

3.2.3.4 Less Flammable, Liquid-Filled Transformers. Transformers insulated with less flammable liquids (fire point not less than 572 degrees F (300 degrees C)), as defined by ASTM D92, Standard Test Method for Flash and Fire Points by Cleveland Open Cup, shall be permitted to be installed without a vault in buildings of Type I and Type II construction in areas in which no combustible materials are stored, where there is a liquid confinement area, and where the installation complies with restrictions provided for in the listing of the liquid. Such indoor installations not meeting the requirements of the liquid listing, or installed in other than Type I or Type II buildings, or in areas where combustibles materials are stored shall (1) be provided with an automatic fire suppression system and a liquid containment area, or (2) be installed in an approved vault. Transformers installed indoors and rated over

35,000 volts (V) shall be installed in a vault.

a) Less flammable liquid-filled transformers installed outdoors whose required spill containment is within 5 feet (1.5 m) of the building shall adhere to the same requirements for ordinary oil-insulated transformers. If they are isolated and present no exposure hazard to important structures, they may be protected with fire hydrants. For additional information, refer to FM Loss Prevention Data Sheets.

3.2.3.5 Dry Type Transformers. Dry type transformers shall be installed and located in accordance with NFPA 70.

### 3.3 Trash Collection and Disposal Facilities

3.3.1 Central Trash Collection and Dumpsters. Central trash collection units and dumpsters shall be placed 15 feet (4.6 m) or more away from wood frame or metal buildings or from openings in masonry-walled buildings.

3.3.2 Collection, Baling, and Storage Rooms. Collection, baling, and storage rooms shall consist of 2-hour fire resistive construction and shall be protected by automatic sprinklers.

3.3.3 Trash Chutes. Trash chutes in buildings shall be equipped with automatic sprinklers. In non-sprinklered buildings, trash chute sprinkler systems may be connected to the domestic water system.

Section 4: SPECIAL OCCUPANCIES AND HAZARDS

4.1 Personnel Housing and Similar Lodging Facilities. These facilities include barracks, dormitories, lodges, temporary or transit living facilities, and sleeping quarters for over 10 persons.

4.1.1 Sleeping Room. Provide hard-wired smoke detectors in accordance with NFPA 72, Installation, Maintenance, and Use of Protective Signaling Systems. A single station hard-wired smoke detector shall be provided for each sleeping room regardless of occupancy or the presence of other detection or protection systems in the building. When activated, the affected unit shall generate an audible signal in the room. Single station smoke detectors shall be powered from the building electrical system. Battery powered detectors are not permitted.

Note: For Air Force projects in unsprinklered facilities, a heat detector shall also be provided in each sleeping room that shall sound a general building alarm and transmit a signal to the fire department or to a constantly monitored central location.

4.1.2 Open Bay Personnel Housing. Provide a supervised smoke detection system in accordance with NFPA 72. Smoke detectors shall be located in open bay sleeping areas and exit access corridors. When activated, these units shall sound a general building alarm and transmit a signal to the fire department or to a constantly monitored central location. Corridor detectors are not required if the building is protected with complete automatic sprinkler protection.

4.1.3 Hotel-Style Housing Quarters. Provide hard-wired smoke detectors in accordance with NFPA 72. Single station smoke detectors are required in each sleeping room. Supervised smoke detectors shall be located in the interior corridors of hotel-style personnel housing quarters. When activated, the corridor smoke detectors shall sound a general building alarm and transmit a signal to the fire department or to a constantly monitored central location. Corridor detectors are not required if the building is protected with complete automatic sprinkler protection.

4.1.4 Apartment-Style Personnel Housing Quarters. Provide hard-wired smoke detectors in accordance with NFPA 72. Single station smoke detectors are required in each sleeping room, and in living and lounge areas of apartment-style personnel housing quarters. When activated, these units shall sound an audible alarm in the room. Single station smoke detectors shall be powered from the building electrical system. Battery powered detectors are not permitted. Supervised smoke detectors shall be located in the interior exit access corridors outside of the unit of apartment-style personnel housing quarters. When activated, these units shall sound a general building alarm and transmit a signal to the fire department or a constantly monitored central location. Corridor detectors are not required if the building is protected



with complete automatic sprinkler protection. For type of construction, see par. 2.1.3.

4.1.5 Automatic Sprinkler Protection. Complete automatic sprinkler protection shall be provided for buildings which include personnel housing and lodging. NFPA 13 or NFPA 13R, Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height, sprinkler systems are permitted when listed for the specific use.

Note 1: For Army projects, hotel-style buildings without individual cooking facilities which are less than four stories in height and where sleeping rooms and suites have a door that opens directly to the outside at street or ground level or to exterior exit access arranged in accordance with NFPA 101, do not require sprinkler protection.

Note 2: For Air Force projects, hotel-style housing quarters which are less than three stories in height and where sleeping rooms and suites have a door that opens directly to the outside at street or ground level or to exterior exit access arranged in accordance with NFPA 101, do not require sprinkler protection.

4.1.6 Range Top Cooking Surfaces. Personnel housing and similar lodging facilities with individual range top cooking surfaces shall have automatic sprinkler protection throughout the building.

4.1.6.1 Common Areas. Range top cooking surfaces located only in common areas (i.e., not in individual units) may be protected with an approved range top extinguishing system installed in accordance with NFPA 96. Such systems shall be connected to the building fire alarm system to sound a general building fire alarm.

4.1.7 Storage Areas, Shops, and Laundry Areas. Storage areas, shops, laundry areas, and other hazardous areas shall be protected as required by NFPA 101. In many cases, this will require both automatic sprinklers and fire rated construction. Where these areas are required to be sprinklered in buildings without complete automatic sprinkler protection, connection to domestic plumbing shall be permitted in accordance with NFPA 13. Where these areas are not protected by automatic sprinklers, provide automatic heat detectors connected to the building fire alarm system.

4.2 Family Housing. This section includes one-family, two-family, and multi-family dwellings.

4.2.1 Family Housing Detection. Family housing shall conform to NFPA 101. Provide hard-wired smoke detectors in accordance with NFPA 72.

Exception: Smoke detectors are not required in individual sleeping rooms where residential sprinklers are installed.

4.2.2 Family Housing Sprinkler Protection. Residential sprinkler protection shall be provided in new multi-family housing in accordance with the Fire Administration Authorization Act of 1992. NFPA 13, NFPA 13D, Installation of Sprinkler Systems in One- and Two-Family Dwellings and Mobile Homes, or NFPA 13R sprinkler systems are permitted when listed for the specific use.

4.2.3 Family Housing Requirements. Family housing located outside military installations or bases shall comply with provisions of par. 4.2 as well as local fire and building codes.

4.2.4 Sprinkler Protection in Family Housing Rehabilitation Projects. For multi-family housing rehabilitation projects where the construction cost is 70 percent or more of the replacement value of the housing unit, provide automatic sprinkler protection in accordance with NFPA 13, NFPA 13D, or NFPA 13R.

4.3 Dining and Food Preparation Facilities. Hood and duct systems for commercial cooking equipment which produces smoke or grease-laden vapors shall comply with NFPA 96. Activation of fire suppression systems shall sound a general building fire alarm and transmit a signal to the fire department or to a constantly monitored location.

4.4 Medical Facilities. This section includes hospitals, composite medical facilities, occupational health clinics, outpatient clinics, dental clinics, flight medicine clinics, and similar facilities. These facilities shall conform to NFPA 101; NFPA 99, Health Care Facilities; MIL-HDBK-1191, Medical and Dental Treatment Facilities Design and Construction Criteria; and the following:

4.4.1 Occupancy Use Classification. Occupancy use classification shall be as follows:

a) Medical facilities, or any part thereof, routinely treating inpatients shall be classified as health care occupancies.

b) Medical facilities, or any part thereof, used to provide treatment on an outpatient basis for four or more patients, which would render them incapable of taking action for self preservation under emergency conditions without assistance from others, shall be classified as an ambulatory health care occupancy. Clinic spaces attached to or within a portion of a medical center, hospital complex, or composite medical facility shall be classified as an ambulatory health care occupancy.

c) Medical facilities normally used by outpatients capable of taking action for self preservation under emergency conditions without assistance from others shall be classified as a business occupancy.

4.4.2 Construction Type. Construction type (as defined in the UBC) shall

comply with the following:

a) Medical centers, hospitals, composite medical facilities, and ambulatory health care facilities.

- (1) Four or more stories - Type I
- (2) Two or three stories - Type II - Fire Resistive
- (3) Single story - Type II One-Hour

b) Detached outpatient and dental clinics

- (1) Three stories or more - Type II - Fire Resistive
- (2) One or two stories - Type II - N

Exception: Medical facilities designed and constructed in accordance with the requirements of the Integrated Building System (IBS), with a walk-on platform which provides access to the distribution zone (interstitial space), shall meet the criteria of NFPA 101 and NFPA 220. Refer to MIL-HDBK-1191.

4.4.3 Fire Area Limitations. Fire areas shall be in accordance with the UBC.

Exception: Medical facilities designed and constructed in accordance with the requirements of the IBS.

4.4.4 Building Height Limitations. Building height limitations shall be in accordance with the UBC.

Exception: Medical facilities designed and constructed in accordance with the requirements of the IBS shall meet the height limitations of NFPA 101.

4.4.5 Sprinkler Protection. Medical facilities shall be protected throughout by an approved automatic sprinkler system.

Exception 1: Stand-alone, outpatient and dental clinics less than three stories in height; of Type II One-Hour, Type II Fire Resistive, or Type I construction.

Exception 2: Distribution zone and connection zone (space above suspended ceiling) of facilities designed and constructed in accordance with the requirements of the IBS.

4.5 Detention and Correctional Facilities

4.5.1 Requirements. Comply with NFPA 101 and the following:

a) Individual fire areas shall not exceed 50,000 square feet (4647 m<sup>2</sup>).

b) Construction type shall not be less than Type II - Fire Resistive, as defined in the UBC.

c) Provide a minimum separation from other structures and public ways of 20 feet (6 m).

d) Provide complete automatic sprinkler protection. Design should utilize correctional (breakaway) type sprinkler heads. Sprinkler piping in inmate areas should be concealed.

e) Provide smoke detection in all areas.

f) Provide an automatic smoke removal system in cell areas. In addition, provide manual system activation controls at a continuously manned position outside of the cell area.

g) Provide for constant visual supervision of cell areas. If this supervision is by direct line of sight, it must be separated by not less than one-hour fire rated construction.

Note: Waterfront briggs shall not exceed one story in height.

4.5.2 Locking Devices. Provide mechanical or closed circuit electrical gang release devices whenever 12 or more locks must be operated to release prisoners confined in cells. Require gang release devices to open doors necessary to evacuate prisoners to an area of refuge. Require heavy, identically keyed, prison-type locks for exit and corridor doors not requiring gang release devices which must be opened for evacuation in the event of fire.

Exception: Dormitory-style confinement facilities.

4.5.3 Hardware. Hardware shall conform to Army Corps of Engineers Guide Specification CEGS-08701, Hardware Prison Locking Devices.

4.5.4 Interior Finish. Interior finish including padded cells shall be Class A flame spread (i.e., 25 or less) and shall have a SD rating not exceeding 50 when tested in accordance with ASTM E84.

4.6 Libraries. Combustible shelving, stacks, cases, cabinets, fixtures, furniture, and furnishings shall be eliminated to the maximum practical extent. Wall and ceiling finish materials shall be noncombustible.

a) In buildings equipped with automatic sprinklers, libraries shall be protected by automatic sprinklers.

b) In buildings not equipped with sprinkler protection, the following protection features shall be provided for those libraries containing materials which are rare, irreplaceable, or important to the activity mission:

(1) Buildings of fire resistive or noncombustible construction shall have smoke detection systems installed throughout the library area and provide a fire cutoff having a fire resistance rating of at least one hour to separate the library from other occupancies.

(2) Buildings of combustible construction shall have complete automatic sprinkler protection for the library area. The library area shall be separated from the remainder of the building by fire walls having a fire resistance rating of at least 2 hours.

#### 4.7 Child Development Facilities

4.7.1 Child Development Centers (CDCs). CDCs shall conform to the requirements of NFPA 101 for day care centers, except as modified herein. Since DOD has adopted staffing levels less than those required by NFPA 101, the following additional requirements shall apply to CDCs:

a) CDCs shall not be located in basements or above the level of exit discharge.

b) An automatic sprinkler system shall be provided regardless of construction type or building height. The entire building shall be provided with complete automatic sprinkler protection in mixed occupancies. New CDCs shall utilize quick response sprinklers.

c) Provide a complete automatic smoke detection system in accordance with NFPA 72. In locations where smoke detectors generate false alarms, heat detectors may be used. Activation of a single smoke detector, manual pull station, sprinkler water flow switch, or heat detector (if applicable) shall cause activation of the fire alarm system. Indication of alarm shall be by audiovisual alarm indicating devices and automatic transmission of alarm to the fire department.

d) Dead end corridors shall not be permitted.

e) Provide at least one exit door discharging directly to the outside from each activity room. Provide low profile thresholds and ramps to grade for all elevation changes. Provide hardened surface leading a sufficient distance away from the building. Exit doors and path of travel shall be sufficiently wide enough to permit rolling cribs and wheel chairs to be taken directly to the outside of the building and away from any danger or hazards.

f) Every exterior exit door shall be provided with panic hardware. Pressure actuated panic bars are preferred to minimize the obstruction to the

clear egress width. For crib rooms, provide single-action hold-open devices to prevent automatic closing of the door.

g) Interior finish materials in exit corridors and rooms used by children shall not be less than Class A and in other areas shall not be less than Class B rated.

4.7.1.1 Locations. CDCs shall not be located in a mixed occupancy with any B-1, B-3, B-4, H, or M-1 occupancy as defined in the UBC. In any permitted mixed occupancy, CDCs shall be separated from other occupancies by a minimum of one-hour fire rated construction.

Exception: Army CDCs, shall comply with NFPA 101 and the Army Corps of Engineers Architectural and Engineering Instructions Design Criteria, Appendix G. This exception applies to criteria listed in par. 4.7.1.

4.7.2 Other Child Development Facilities. Other child development facilities include part-day, preschool, kindergarten, before and after school programs, etc. These facilities shall comply with the provisions of educational occupancies in NFPA 101, and do not have to comply with the day care center provisions.

4.8 Electronic Equipment Installations. These areas include major automatic data processing (ADP) areas, communication centers, command and control systems, and other mission critical systems. Incidental electronic equipment such as word processing stations, printers, and systems; desk top computers; office automation systems; individual data output stations (e.g., printers, etc.); individual computer work stations; telephones; video conference centers; administrative telephone rooms; reproduction equipment; and similar equipment do not require protection under this section.

4.8.1 Requirements. Electronic equipment installations shall be constructed and protected in accordance with NFPA 75, except as modified herein.

4.8.1.1 Automatic Sprinkler Protection. Electronic equipment installations shall be located in buildings protected by wet-pipe automatic sprinklers. Provide complete coverage throughout the building including electronic equipment areas. Electrical equipment installations should be protected by disconnecting the power upon activation of the fire protection system. Where deluge systems are used in electronic equipment installation locations, the use of waterproof thermal heat detectors, light fixtures that are approved for damp locations, and non-ventilated NEMA Type 4 enclosures for all other exposed non-explosion proof equipment is required.

4.8.1.2 Data and Power Cabling. Power cables installed in the ceiling plenum or below the raised floor shall meet the requirements of NFPA 70, except that use of nonmetallic conduit shall not be permitted. Data and other

communication cables installed in ceiling spaces and under raised floors shall be plenum rated or installed in conduit in accordance with NFPA 70. Use of nonmetallic conduit is not permitted. If plenum rated cable or conduit cannot be provided, an extinguishing system shall be provided in the under floor or ceiling area.

#### 4.9 Ordnance

4.9.1 Ordnance Facilities. Ordnance facilities used for handling, processing, servicing, and inspection of ammunition, explosives, propellants and oxidizers or related devices containing these materials shall have complete automatic sprinkler protection and comply with DOD Instruction 6055.9-STD, DOD Ammunition and Explosive Safety Standard. Requirements for UBC Group H occupancies shall be followed in the absence of specific guidance in DoD Instruction 6055.9-STD and the individual service regulations based directly on DoD Instruction 6055.9-STD. The service regulations include:

1. For Navy projects, NAVSEA OP-5, Ammunition and Explosives Ashore.
2. For Army projects, Army AR 385-64, U.S Army Explosives Safety Program and the Army Material Command Regulation 385-100, Safety Manual.
3. For Air Force projects, Air Force AFM 127-100, Explosives Safety Standard.

4.9.1.1 Sprinkler Protection. Automatic sprinkler systems in ordnance facilities shall be provided with flexible couplings and sway bracing similar to that provided for buildings in earthquake zones. Complete automatic sprinkler protection is required for ordnance facilities used for production, handling, processing, servicing, and inspection of ammunition, explosives, propellants, and oxidizers or related devices containing these materials, unless such a system will aggravate the hazard. The following guidelines for automatic sprinkler protection shall apply:

a) Where exposed thermally energetic materials are handled that have a high probability of ignition, a large thermal output and a high probability of causing personnel injury, operations shall be protected using ultra-high speed deluge systems. Ultra-high speed deluge systems have a response time of 0.2 seconds or less. Response time is measured from the time that an energy source is presented to the detector to the time of initial water flows on the hazard from the critical nozzle, which is normally the nozzle closest to the hazard. Ultra-high speed detectors usually consist of preprimed deluge systems and optical flame detection which views the hazard. Piping is pitched 1/4-inch per 10 feet with air bleeders at the high point. Pipe runs and bends are kept to a minimum.

b) Provide high-speed (operation of 0.5 seconds or less),

preprimed deluge systems wherever exposed powder, explosives, or propellants are processed or stored in ordnance production facilities. Complete protection of such locations is essential. Refer to Table 5.1.2, in Section 5.

c) Provide ordinary deluge systems in other areas or auxiliary sections of buildings in which processing of explosives or propellants takes place.

d) Provide deluge systems, wet-pipe systems, or pre-action systems in other areas or auxiliary sections of buildings in which storage of explosives or propellants takes place.

d) Provide wet-pipe sprinkler systems in other areas or auxiliary sections of buildings if separated by fire partitions.

e) Wet-pipe or pre-action sprinkler systems where missile assembly inspection or storage is carried on and where the propellant is confined within the missile, or warheads are present. Similar protection shall be provided for torpedo and air underwater weapons shops.

f) Heat detection equipment of any type is acceptable if equipment meets the operating time limitations and is suitable in other respects, such as complying with explosion-proof requirements. When pneumatic-type detection equipment is used, not more than three detectors, and preferably only one, shall be on a single circuit. The detectors shall be in the same heat influence area.

g) A system providing complete supervision of deluge and pre-action systems shall be provided so that any deficiency that develops that would affect the speed or reliability of operation will give a distinct alarm separate from the water flow alarm.

h) Water supplies for deluge systems shall be adequate to supply the total demand of the largest fire area at the specific residual pressure required by the system, plus an allowance for hose stream demand, for a period of 45 minutes.

4.9.1.2 Water Demands for Exposed Powder and Propellant Facilities. Water demands for ordnance facilities that handle exposed powder and propellants shall be 0.50 gpm/square feet, over the entire area for 90-120 minutes.

4.9.1.3 Water Demands for Stored Missile Assemblies and Other Ordnance Facilities. Water demand for stored missile assemblies and all other ordnance facilities requiring sprinkler protection shall meet or exceed the design requirements for extra hazard group 2 occupancies shown in table 5.1.2.

4.9.2 Magazines and Bunkers. Magazines and bunkers shall be constructed



and located in accordance with DOD Instruction 6055.9. Storage facilities not located under the same roof as facilities used for handling, processing, servicing, and inspection of ammunition, explosives, propellants, and oxidizers shall be constructed and located in accordance with DOD Instruction 6055.9-STD. Automatic sprinklers are not required in magazines, bunkers, and storage facilities which comply with DOD Instruction 6055.9-STD.

4.10 Warehouses and Storage Facilities. These criteria apply to facilities (except ordnance) used for storage, shipping, receiving, packing, and processing of materials.

4.10.1 Sprinkler Protection. Complete automatic sprinkler protection shall be provided for warehouses and storage facilities 5,000 square feet (464.68 m<sup>2</sup>) or greater, and mixed occupancy facilities containing warehouse and storage facilities 5,000 square feet (464.68 m<sup>2</sup>) or greater. Sprinklers shall be provided for smaller facilities containing materials, equipment and supplies that are mission essential, pose a severe fire hazard, are of high monetary value, pose a safety or environmental health risk, or expose an important structure. Sprinkler protection shall include covered loading docks.

a) Sprinkler protection shall be based on Class IV commodities, as defined by NFPA 231, General Storage and NFPA 231C, Rack Storage of Materials, unless a more severe class of storage is anticipated, and shall be based on the maximum potential height of storage.

b) Ceiling sprinklers in warehouses shall have a temperature rating of 286 degrees F (141.1 degrees C) for storage under 25 feet (7.62 m), and 165 degrees F (73.89 degrees C) for storage 25 feet (7.62 m) and higher. In-rack sprinklers shall be ordinary temperature rated.

c) In-rack sprinklers shall be supplied from risers which are separate from the ceiling sprinklers.

Exception: Existing facilities.

d) Warehouses with rack storage over 12 feet (3.66 m) high shall be protected in accordance with NFPA 231C; general storage over 12 feet (3.66 m) or of group A plastics as defined by NFPA, shall be protected in accordance with NFPA 231. Automatic storage and retrieval systems and bin boxes stacked in rack support structures shall be protected as rack storage.

e) Non-encapsulated rack storage over 22 feet (6.7 m) in height and encapsulated rack storage over 12 feet (3.66 m) in height shall be protected with in-rack sprinklers. Racks with solid shelves over 12 feet (3.66 m) in height shall be protected with in-rack sprinklers at every tier or shelf level. Early suppression fast response (ESFR) sprinklers may be used in lieu of in-rack sprinklers in accordance with NFPA 231C.

4.10.2 Bin Storage. Bin storage consists of five-sided, open from top or side storage containers, stacked in rack structures. They are commonly used in automatic storage and retrieval systems. Bin storage requires unique considerations for fire protection. Bin storage configurations do not limit oxygen supply. Horizontal flame spread can be rapid. The narrower the aisles and the higher the storage, the less ceiling sprinkler water penetration is delivered to control the fire.

4.10.2.1 Requirements. Protection of bin storage stacked in rack configuration shall be in accordance with NFPA 231C. Combustible bins in racks present a greater fire hazard and require a 10 percent increase in ceiling density or one additional level of in-rack sprinklers. Bin storage not stacked in a rack configuration shall be protected in accordance with NFPA 231. Mini-storage and retrieval systems and carousel storage shall be protected in accordance with FM Loss Prevention Data Sheet 8-33S, Protection for Automatic Storage and Retrieval Systems.

4.10.3 Column Protection. Steel columns located within rack storage areas (actually surrounded by racks) over 10,000 square feet (929.36 m<sup>2</sup>) shall be protected by 2-hour fire rated construction or applied fireproofing or by sidewall sprinklers at 15-foot (4.57 m) elevation intervals pointing directly at the column.

4.10.4 Fire Area Limitation and Separation. Warehouse fire areas shall not exceed 60,000 square feet (5576.2 m<sup>2</sup>). Warehouse fire areas may be increased to 120,000 square feet (11152.41 m<sup>2</sup>) with the following provisions:

- a) Ceiling sprinkler design area shall be increased by 10 percent.
- b) Looped mains with adequate sectional valves shall be provided around the facility.

4.10.5 Fire Walls. Fire walls separating warehouse and storage fire areas shall be of 4-hour fire rated construction. Other occupancies such as offices and shops shall be separated from the warehouse and storage area by a minimum of one-hour fire rated construction.

4.10.5.1 Openings in 4-Hour Rated Fire Walls. Openings in 4-hour rated fire walls shall be protected by Class A fire doors in accordance with NFPA 80, on both sides of the wall. Personnel doors may be protected by a single Class A fire door. Fire doors shall be labeled by a NRTL, refer to par. 2.5.2.

4.10.5.2 Conveyor and Mechanical Handling System Penetrations. When mechanical handling systems such as conveyors are required to penetrate fire walls, and fire doors are not feasible, the opening shall be protected on both sides of the wall by a deluge water spray tunnel system in accordance with FM Loss Prevention Data Sheet 1-23, Protection of Fire (Wall) Partition Openings With Water Spray. The deluge water spray tunnel system shall consist of a separate water spray system for both sides of the opening, and a metal or

masonry enclosure around the opening extending a minimum of 5 feet (1.5 m) from both sides of the wall. The spray system shall consist of open spray nozzles that provide a minimum of 2.0 gpm/square feet (0.126 L/s) of opening and shall be activated by heat detectors. Both systems shall be activated simultaneously by any detector. The systems shall be supplied from a separate riser independent of the overhead sprinkler system. Each system shall be equipped with a control valve. Water supply shall be capable of supplying the deluge systems in addition to other required fire protection demands. Operation of any deluge system or sprinkler system protecting the area of the handling system shall automatically shut down the handling system.

#### 4.11 Storage of Flammable and Hazardous Materials and Hazardous Waste

4.11.1 Flammable/Hazardous (Flam/Haz) Storage. Flam/haz storage includes storage of flammable and combustible liquids as well as storage of materials which are classified as hazardous materials. Provide protection for facilities storing flammable and combustible liquids and other petroleum oil lubricant (POL) products in accordance with NFPA 30, Flammable and Combustible Liquids Code. Class IIIB combustible liquids shall be protected in the same manner as Class IIIA combustible liquids in accordance with NFPA 30. A single building is often used for storage of both flammable and combustible liquids and hazardous materials. Storage of hazardous waste is separate and distinct from storage of hazardous materials.

Note: For Navy facilities used to store hazardous materials, also refer to MIL-HDBK-1032/2, Covered Storage. For Navy and Air Force facilities used to store hazardous waste, also refer to MIL-HDBK-1005/13, Hazardous Waste Storage Facilities.

4.11.1.1 Warehouse Areas for Storage of Flammable Liquids, Solids, and Hazardous Materials. Warehouse areas for storage of flammable liquids, solids, and hazardous materials and chemicals shall not exceed 20,000 square feet (1858.74 m<sup>2</sup>) between fire walls. Fire walls shall have a minimum 4-hour rating. Ceiling height shall not exceed 30 feet (9.14 m).

4.11.2 Flammable and Combustible Liquid Storage Areas. Provide automatic sprinkler protection in accordance with NFPA 30, based on the classification of liquids and storage configuration. The following minimum criteria shall apply:

a) Provide a minimum longitudinal flue space of 12 inches (30.48 cm) between double row racks and 9 inches (22.86 cm) between single row racks and the wall.

b) Provide ceiling level sprinklers and longitudinal flue space sprinklers located at every level of rack storage.

Exception: Where multiple levels of rack storage are used below the 6 foot (1.83 m) level for hand picking operations, provide

one extra row of in-rack sprinklers in the longitudinal flue space at the 3 foot (0.914 m) level. The first level of storage shall not be below the one foot (0.305 m) level to facilitate easier cleanup of spills.

4.11.2.1 Aqueous Film Forming Foam (AFFF). AFFF sprinkler systems are an appropriate means of protecting flammable and combustible liquids. AFFF systems may be used where permitted by NFPA 30.

4.11.3 Hazardous Materials Storage Areas. Provide a minimum of 2-hour fire rated construction between hazardous materials storage areas and those used for storage of flammable and combustible liquids. These areas shall be labeled as "Hazardous Materials Only," and shall also be labeled as to the type of sprinkler protection present in each room. Provide automatic sprinklers at the ceiling level as well as one mandatory level of in-rack sprinklers (i.e., in the flue space between the rack and the wall) located at or slightly above the midpoint with respect to overall storage height. Design ceiling level sprinkler densities based on the storage of Class IV commodities in NFPA 231C. In water reactive areas, provide automatic sprinklers with an OS&Y valve to be locked in the closed position. Provide a metal sign indicating the OS&Y valve is to remain locked in the closed position unless a fire is detected in the storage area. The sign can be attached to a chain and connected to the OS&Y valve or fastened permanently to the wall provided it does not interfere with the operation of the valve. Locate the OS&Y valve outside the water reactive storage area.

4.11.4 Hazardous Waste Storage Facilities. For hazardous waste storage facility requirements, refer to the following:

- a) NFPA 30
- b) NFPA 43C, Storage of Gaseous Oxidizing Materials
- c) NFPA 43D, Storage of Pesticides in Portable Containers
- d) NFPA 49, Hazardous Chemicals Data
- e) NFPA 490, Storage of Ammonium Nitrate

4.11.4.1 Fire Protection for Hazardous Waste Storage Facilities. The following minimum criteria shall be provided:

- a) Exterior Fire Walls

(1) Exterior walls shall have a 4-hour fire rating when the facility is attached to a structure or it is located within 10 feet (3 m) of another building or property line.

- (2) Exterior walls shall have a 2-hour fire rating when the

facility is located more than 10 feet (3 m) but less than 50 feet (15 m) from an important building or property line.

(3) Exterior walls shall be of noncombustible construction when the facility is more than 50 feet (15 m) from another building or property line.

b) Interior Fire Walls

(1) Interior fire walls shall have a 4-hour fire rating if the facility is located within a structure that houses other occupancies.

(2) Interior fire walls shall have a 2-hour fire rating when the area of the room is greater than 300 square feet (28 m<sup>2</sup>).

(3) Interior fire walls shall have a one-hour rating when the area of the room is 300 square feet (28 m<sup>2</sup>) or less.

c) Sprinkler Protection

(1) Install sprinkler systems suitable for a corrosive environment, in accordance with NFPA 13.

4.11.5 Spill Containment. Provide spill containment for flammable and combustible liquids, hazardous materials, and hazardous waste in accordance with NFPA 30.

4.11.6 Prefabricated Structures. Prefabricated structures (which may be portable) are an acceptable means of storing flammable and hazardous materials and hazardous waste provided they meet the fire protection and spill containment requirements stated herein. Where used, a single prefabricated structure shall not exceed 400 square feet (37 m<sup>2</sup>). It is preferable to locate these types of structures outside. Where it is impractical to provide sprinkler supply lines to a prefabricated structure due to distance from an adequate water supply, dry chemical fire extinguishing systems are acceptable.

4.11.7 Outdoor Storage Limitations and Separation. Flammable and combustible liquid outdoor storage includes any storage that is covered by a roof to provide weather protection for containers. The same area may have one or two (but no more than two) walls. Flammable and combustible liquid outdoor storage shall not be more than 400 feet long or wide (121.9 m) and each area shall be separated by 100 feet (30.48 m). No container or portable tank in a pile shall be more than 200 feet (60.96 m) from a 40-foot (12.19 m) wide minimum fire lane to permit approach of fire control apparatus under all weather and ground surface conditions. Fire hydrants shall be located in accordance with the NFPA, but shall not be more than 200 feet (60.96 m) apart.

4.11.8 Electric Wiring and Equipment. Where flammable liquids are dispensed or transferred, electric wiring and equipment shall be suitable for

hazardous (classified) locations in accordance with NFPA 70. Where flammable liquids are not dispensed or transferred, ordinary (not classified) locations for electrical equipment shall be provided.

#### 4.12 Waterfront Facilities

4.12.1 Waterfront Facilities Requirements. NFPA 307, Construction and Fire Protection of Marine Terminals, Piers, and Wharves and NFPA 312, Fire Protection for Vessels During Construction, Repair, and Lay-up constitute the minimum requirements for waterfront and harbor facilities. Naval waterfront and harbor facilities shall comply with all of the following:

- a) NFPA 307.
- b) NFPA 312.
- c) MIL-HDBK-1025/1, Piers and Wharves.
- d) MIL-HDBK-1025/2, Dockside Utilities for Ship Service.
- e) MIL-HDBK-1025/6, General Criteria for Waterfront Construction.
- f) MIL-HDBK-1029/1, Graving Dry Docks.
- g) MIL-HDBK-1029/2, Marine Railways.
- h) MIL-HDBK-1029/3, Dry Docking Facilities Characteristics.

4.13 POL Facilities. Requirements for POL facilities are contained in NFPA 30, NFPA 385, Tank Vehicles for Flammable and Combustible Liquids, and applicable service criteria. Standards of the American Petroleum Institute (API) provide additional guidance. Refer to Section 5 for water supply requirements. Refer to NAVFAC DM-22, Petroleum Fuel Facilities, for additional criteria.

#### 4.14 Flammable and Combustible Liquids

4.14.1 Internal Floating Roof Tanks. An internal floating roof shall be provided on vertical tanks storing flammable and combustible liquids. Internal floating roofs shall be constructed of honeycomb steel or honeycomb aluminum. Floating pan construction of sheet aluminum or sheet steel is not permitted in new construction.

4.14.2 Protection of Storage Tanks. AFFF fire extinguishing systems shall be provided for flammable and combustible liquids as follows:

(Research Protection of Tanks vs Seal Protection and Research Combustible Liquids)

a) Aboveground vertical tanks with floating pan roofs less than 126 feet in diameter shall be provided with an extinguishing system consisting of the necessary foam chambers, piping, valves, and controls to be supported by fire department crash and structural apparatus. Location of fire department connections should be coordinated with the local fire chief.

b) Larger diameter tanks (>126 feet) shall be protected by a complete and independent AFFF fire protection system designed and constructed in accordance with NFPA 11, Low Expansion Foam and Combined Agent Systems.

4.14.3 Combustible Liquids Under Pressure. Any combustible liquid under pressure shall be treated as a flammable liquid when such liquids are located in pump houses and hydraulic test facilities. For pump houses for Navy facilities, refer to NAVFAC DM-22. For pump houses on Army projects, refer to the appropriate NFPA standards. For hydraulic test systems, comply with the following:

a) For hydraulic systems that use pressures exceeding 200 psi (1379.5 Kpa), SAE 1,010 dead-soft, cold-drawn, seamless-steel tubing (or equivalent) shall be used. A factor of safety of eight over normal working pressure shall be used. Tubing is preferable to pipe. Tubing can be bent to fit in restricted spaces with a minimum number of fittings, reducing the number of possible leakage points. Solderless, steel fittings of the flareless "locking-sleeve" type or flare type shall be used.

b) Use of threaded pipe should be avoided. Where threaded connections are used, requirements of ANSI B2.1 shall be met. A safety factor of eight over maximum normal pressure shall be used.

c) Tubing runs shall have as few bends as possible, but should have at least one bend to provide for thermal expansion and contraction. The minimum radius of tube bend shall be three tube diameters.

d) Where hose must be used for flexible connections, it shall be steel reinforced, designed for the hydraulic fluid being used, and capable of withstanding five times the actual operating pressure. Hose couplings and fittings and minimum bending radius shall be in accordance with the hose manufacturer's instructions. Hose shall be installed so as not to rub against objects as a result of machine movement, vibration, or pressure surges.

e) Piping and tubing shall be anchored or secured to minimize failure due to vibration. Pipe supports shall not prevent normal thermal expansion.

f) There shall be an accessible, well-marked, emergency shutoff switch for each pump.

g) Provide automatic shutoff switch to deactivate hydraulic pump upon loss of pressure.

4.15 Petroleum-Based Hydraulic Fluids. The following requirements shall apply, in addition to the requirements described in par. 4.14, to petroleum-based hydraulic oils in non-mobile equipment:

a) Provide automatic sprinklers directly over, and at least 20 feet (6.1 m) beyond the hydraulic equipment. Complete sprinkler protection is required if the structure is of combustible construction. Sprinklers may be omitted near a single small system or multiple adjacent small systems not exceeding 100 gallon (378.5 L) aggregate capacity, and if the construction is noncombustible and ignition sources are not normally present, and provisions exist for automatic or manual shutdown of the system(s).

b) An automatic switch, activated by sprinkler water flow alarm, fusible link, or other fire detector, shall be provided to shut down the system if there is 100 gallons (378.5 L) or more of hydraulic fluid.

4.16 Aircraft Hangars. Requirements listed in this section are applicable to fuel cell maintenance facilities, corrosion control and protective coating, and general purpose maintenance hangars. The following criteria applies to new hangars and the renovation or modernization of existing hangars. Existing hangars which are acceptable to the AHJ do not have to be modified to comply with this handbook. All hangars shall comply with NFPA 409, Aircraft Hangars, except as modified herein.

NOTE: For Air Force projects, refer to Air Force ETLs for additional guidance.

4.16.1 Overhead Foam-Water Sprinkler System Requirements. Provide closed head foam-water sprinkler systems using AFFF in the aircraft servicing area. The minimum foam-water solution application rate shall be a uniform 0.16 gallon (0.61 L) per minute per square foot (0.093 square meter) of floor area (6.5 L/min/m<sup>2</sup>).

4.16.1.1 Type of System. Provide wet-pipe foam-water sprinkler systems in areas not subject to freezing. In areas subject to freezing, provide pre-action foam-water sprinkler systems. Sprinkler heads shall have a temperature rating of 286 degrees F. The design area for closed-head systems shall be the hydraulically most demanding areas listed in par. 4.16.4.

4.16.2 Supplementary Systems. Supplementary protection includes automatic low-level (under-wing) nozzle systems using AFFF via either fixed or oscillating nozzles. These systems shall be hydraulically designed, and the total flow rate of the maximum number of anticipated operating systems shall be included in determining the total water supply requirements of the hangar. The flow rate of these systems shall also be included when determining the capacity of foam concentrate to be stored.

4.16.2.1 Supplementary Low-Level (Under-Wing) Fixed AFFF System Requirements.



Supplementary low-level (under-wing) AFFF nozzles shall deliver a foam solution density of not less than 0.10 gallon per minute per square foot of floor area beneath the aircraft. These systems shall be designed in accordance with NFPA 409. Supplementary low-level (under-wing) fixed AFFF nozzle systems shall be provided for the following:

a) Hangars which accommodate aircraft whose wing area is greater than 3,000 square feet.

b) Hangars which may accommodate multiple small aircraft (of high monetary value) in a close or tight configuration.

4.16.2.3 Helicopter Hangars. Helicopter hangars will not normally require supplementary low-level AFFF systems.

4.16.3 Activation of Foam-Water Sprinkler Systems and Supplementary Low-Level (Under-Wing) Fixed AFFF Systems. Activation of a single overhead thermal rate-compensated heat detector, a single manual pull station or a single optical detector shall cause activation of supplementary low-level under-wing systems and pre-action foam-water sprinkler systems. In addition, activation of any foam-water sprinkler system shall activate the supplementary low-level protection systems.

Note: For Army and Air Force projects, optical detection shall not cause the activation of any fire suppression systems.

4.16.3.1 Manual Release Stations. Provide manual release stations for activation of pre-action foam-water sprinkler systems and supplementary low-level under-wing systems. Manual pull stations and manual release stations shall be waterproof and protected from accidental activation. Manual release stations shall be distinctively identified from the manual pull stations associated with the fire alarm evacuation system.

4.16.3.2 Rate Compensated Heat Detectors. Provide "spot-type" rate-compensated heat detectors at the ceiling level where pre-action foam-water sprinkler systems are installed. Rate compensated heat detectors shall be hermetically sealed. Install detectors to provide a maximum coverage of 400 square feet per detector. Detectors shall have a temperature rating not lower than 190 degrees F.

4.16.3.3 Ultraviolet and Infrared Optical Detectors. Provide combination ultraviolet and infrared optical detectors for low-level detection.

4.16.4 Water Supplies. The total water supply shall be capable of furnishing water for the largest number of systems that may be expected to operate. This shall include overhead foam-water sprinkler systems and supplementary fixed under-wing protection systems. For overhead foam-water sprinkler systems, calculate the water supply by assuming that a fire at any point will operate all the systems (i.e., every sprinkler head on that system)

in every draft-curtained area that is wholly or partially within:

a) 50 feet (15.2 m) of the point measured horizontally for hangars with ceiling height of 25 feet (7.6 m) or less.

b) 75 feet (23 m) of the point measured horizontally for hangars with a ceiling height in excess of 25 feet (7.6 m) but not more than 75 feet (23 m).

c) 100 feet (30.6 m) of the point measured horizontally for hangars with a ceiling height in excess of 75 feet (23 m).

Note: For Air Force and Army projects, water supplies to support the overhead foam-water sprinkler systems shall be sufficient to meet the following requirements and supplementary systems. The system shall be designed to supply all sprinkler heads in the hydraulically most demanding areas. The hydraulically most demanding areas shall be as follows:

- (a) 8,000 square feet (740 m<sup>2</sup>) area where roof or ceiling height is 25 feet (7.6 m) or less above floor level.
- (b) 18,000 square feet (1670 m<sup>2</sup>) area where roof or ceiling height is over 25 feet (7.6 m) but not more than 75 feet (23 m) above floor level.
- (c) 35,000 square feet (3250 m<sup>2</sup>) area where roof or ceiling height is over 75 feet (23 m) above the floor level.

4.16.5 Equipment Locations. Foam concentrate tanks, proportioning equipment and sprinkler control valves shall be located in a dedicated room separate from the aircraft servicing area by a minimum of one-hour fire resistive construction. Equipment rooms shall be configured or sized to provide access for inspection, maintenance, and repair of all equipment. Doors providing direct access to the exterior of the structure shall be provided. Equipment shall be located to permit removal of tanks, bladders, valves, pumps, and motors without the removal of other components. Designers should consider using stainless steel piping and pumps to transport foam concentrate.

4.16.6 Controls Locations. Fire detection and actuation system controls shall be installed in an environmentally controlled area not subject to accidental water leakage.

4.16.7 Agent Requirements. Only AFFF concentrate meeting Military Specification MIL-F-24385F, Fire Extinguishing Agent, Aqueous Film-Forming Foam (AFFF) Liquid Concentrate, for Fresh and Seawater, shall be permitted.

4.16.8 Adjacent Areas. Automatic wet pipe sprinkler systems shall be provided in areas of the facility outside of the aircraft storage and service areas.

#### 4.17 Aircraft Acoustical Enclosures

4.17.1 Complete Enclosures (Hush-House). Requirements shall be the same as those listed in par. 4.16, with the following additions:

a) Overhead AFFF systems shall be designed for the entire floor area.

b) Low-level (under-wing) systems shall be provided for uniform coverage of the entire floor area.

c) Overhead and low-level (under-wing) systems shall both be automatically actuated by rate compensated heat detectors. Switches for interrupting the automatic features shall be provided in the control room. Clearly visual indication shall be provided when the automatic features have been interrupted.

d) Separate manual controls for actuation of each AFFF system shall be provided in the control room.

Exception: Air Force installations containing approved gaseous fire extinguishing systems.

4.18 Out-of-Airframe Acoustical Enclosures (Test Cells). The requirements for complete acoustical enclosures listed in par. 4.17 shall be provided. In lieu of an overhead AFFF system, the following may be provided:

a) An overhead water deluge system having a density of 0.35 gpm (0.0221 L/s) per square foot (0.0929 m<sup>2</sup>) over the entire floor area; and

b) A water spray system for the engine having a density of 0.50 gpm (0.0315 L/s) per square foot (0.0929 m<sup>2</sup>) of engine surface area; and

c) A water spray system for the floor area beneath the engine having a density of 0.50 gpm (0.0315 L/s) per square foot (0.0929 m<sup>2</sup>) of floor area.

Note 1: For Air Force projects, the required density for the water deluge system is 0.25 gpm (0.01579 L/s) per square foot over the entire floor area, and compliance with item c) is not required.

Note 2: The overhead deluge system need not extend into the area where the water spray systems for the engine and floor are present.

4.19 Hyperbaric and Hypobaric Chambers

4.19.1 Hyperbaric Chambers. Hyperbaric chambers shall conform to NFPA 99, Chapter 19. Criteria contained in the following documents shall be incorporated into the design of hyperbaric chambers.

- a) NAVFAC DM-39, Hyperbaric Facilities
- b) SS 521-AA-MAN-010, U.S. Navy, Diving and Manned Hyperbaric Systems Safety Certification Manual

4.19.2 Hypobaric Chambers. Hypobaric chambers shall conform to NFPA 99B, Hypobaric Facilities.

4.20 Anechoic Chambers. Anechoic chambers shall be protected in accordance with Factory Mutual Loss Prevention Data Sheet 1-53, Anechoic Chambers. Regardless of separation distance or type of construction, anechoic chambers of high monetary value with respect to construction or contents shall be protected.

4.21 Liquid Oxygen (LOX)

4.21.1 Fixed Liquid Oxygen Tanks. Fixed tanks having combined capacity of 100 gallons (378.5 L) or less and portable tanks shall conform to NFPA 51, Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting, and Allied Processes, and NFPA 43C for industrial applications, and NFPA 99.

Exception: As modified in par. 4.21.2.

4.21.2 Separation Distances for Liquid Oxygen (LOX) Tanks and Carts. Separation distances for LOX tanks and carts shall be as follows:

- a) A minimum of 100 feet from aircraft parking, fueling, or servicing areas.
- b) A minimum of 100 feet from any flammable or combustible liquids handling, servicing, processing, or storage area.
- c) A minimum of 50 feet from any buildings of Type III, IV, or V construction.
- d) A minimum of 25 feet from any buildings of Type I or Type II construction.

4.21.3 Oxygen Bulk Tanks. Fixed bulk tanks having a single or combined capacity of more than 100 gallons (378.5 L) shall conform to NFPA 50, Bulk Oxygen Systems at Consumer Sites.

Exception: As modified in par. 4.21.2.

4.21.4 Bulk Tank Vehicle Parking. Parking for bulk tank vehicles servicing fixed tanks shall meet the separation requirements of NFPA 50, for the fixed bulk tank.

Exception: As modified in par. 4.21.2.

4.21.5 Liquid Oxygen Storage for Propellant Applications. Liquid oxygen storage used for propellant applications shall comply with the DOD Instruction 5154.4, OSHA Standard 1910.109.

Exception: As modified in par. 4.21.2.

4.22 Department of Defense Dependent Schools

4.22.1 Construction. Facilities shall be Type I or II construction in accordance with the UBC.

4.22.2 Requirements. Facilities shall comply with educational occupancies in NFPA 101.

4.23 Vehicle Parking, Storage, Maintenance and Repair Facilities. Facilities utilized for the parking, storage, maintenance, and repair of general and special purpose motor vehicles shall comply with NFPA 88A, Parking Structures and/or NFPA 88B, Repair Garages.

4.23.1 Vehicle Parking. Enclosed buildings used for vehicle parking and storage of 10 or more vehicles shall be protected by an automatic sprinkler system.

4.23.2 Overhaul and Repair Shops. Facilities falling within this category are those in which major overhaul and repairs are made to various types of equipment or their component parts. Disassembly and testing may also be performed in such facilities, which include aircraft shops, automotive garages and repair shops, and ship repair shops.

4.23.2.1 Requirements. Automotive garages shall conform to NFPA 88B. Ship repair facilities shall conform to NFPA 303, Marinas and Boatyards, and NFPA 312. Major aircraft overhaul and repair shops shall conform to NFPA 409.

4.23.3 Refueler Vehicle Facilities. Facilities used for the parking, storage, maintenance, and repair of aircraft refueler vehicles shall:

a) Be protected by an automatic sprinkler system or a closed-head foam-water AFFF sprinkler system, and

b) Utilize Class I Division 2 electrical equipment and wiring as defined by NFPA 70.

4.24 Pesticide Storage and Handling Facilities. Locate facilities or

operations involving the storage, mixing, or handling of non-flammable pesticides a minimum of 100 feet (30.48 m) from the nearest building or occupied structure.

Exception 1: Facilities of Type I or Type II - FR construction as defined by the UBC, may be located less than 100 feet (30.48 m) from the nearest building or occupied structure, but not less than 30 feet (9.14 m) in any case.

Exception 2: Facilities protected by an automatic sprinkler system may be located less than 100 feet (9.14 m) from the nearest building or occupied structure, but not less than 30 feet (9.14 m) in any case.

Exception 3: Existing facilities involving the storage, mixing, or handling of non-flammable pesticides are permitted in a building when all the following are provided:

- (a) The building is completely protected, including the pesticide area, by an automatic sprinkler system.
- (2) The pesticide area is separated by not less than one-hour fire rated construction from the remainder of the building.
- (3) Duct work which penetrates fire rated partitions and wall assemblies is provided with smoke and fire dampers.

4.25 Windowless Structures. Windowless structures are defined in and shall conform to NFPA 101, Chapter 30. Windowless structures three stories or more in height shall also be provided with a manually activated smoke exhaust system.

Section 5: WATER SUPPLY FOR FIRE PROTECTION

5.1 Water Demands for Sprinklered Facilities

5.1.1 Factors Influencing the Water Demand for Sprinklers. The water demand required for sprinkler protection depends upon occupancy, discharge density, design area, and type of sprinkler system (wet or dry), type of construction, and other building features.

5.1.2 Water Demand for Sprinklers. The water demand required for sprinklers shall be determined from Table 5.1.2. Refer to Appendix B for occupancy classifications.

5.1.2.1 Design Densities. Design densities indicated in Table 5.1.2 are minimum densities, and each sprinkler in the design area shall discharge at least the flow rate required to produce the stipulated density.

5.1.2.2 Design Area. Design areas shown in Table 5.1.2 are the hydraulically most remote areas.

5.1.3 Water Demand for Hose Streams. Hose streams are needed concurrently with sprinkler discharge in order to effect final extinguishment or to wet down adjacent structures. The hose stream demand for sprinklered occupancies shall be determined from Table 5.1.2.

5.1.4 Total Water Demand for Sprinklered Occupancies. The total water demand for sprinklered occupancies is equal to the sum of the domestic demand plus the sprinkler system(s) water demand and the hose stream(s) demand. The total demand shall be available at the sprinkler system connection to the underground main, and at the pressure necessary to produce the required sprinkler density over the required hydraulically most remote area of sprinkler operation.

5.1.5 Water Demand for Sprinklers (Special Facilities). Special requirements apply to some facilities, as indicated in pars. 5.1.5.1 through 5.1.5.5.

5.1.5.1 Aircraft Hangars. Water demands for aircraft hangars shall be in accordance with par. 4.16.

5.1.5.2 Warehouses (High Piled or High Rack Storage). Water demands for warehouses containing high rack storage shall conform to NFPA 231C. Water demands for warehouses containing high piled storage shall conform to NFPA 231.

5.1.5.3 Ordnance Facilities. Water demands for ordnance facilities shall conform to par. 4.9.

Table 5.1.2  
Water Demands for Sprinklered Facilities

OCCUPANCY CLASSIFICATION[1]	SPRINKLER		HOSE Gal/Min (L/Min)	DURATION OF SUPPLY Minutes
	DESIGN DENSITY $L_2^J$ (Gal/Min)/FT $L_2^J$ (L/min/m $L_2^J$ )	DESIGN AREA FT $L_2^J$ (m $L_2^J$ )		
Light Hazard	0.10 ( 4)	3,000(280)	250( 960)	45
Ordinary-Hazard Group 1	0.15 ( 6)	3,000(280)	500(1,920)	60
Ordinary-Hazard Group 2	0.20 ( 8)	3,000(280)	500(1,920)	75
Extra-Hazard Group 1	0.30 (12)	3,000(280)	750(2,820)	120
Extra-Hazard Group 2	0.35 (14)	3,000(280)	750(2,820)	120

- 1 Refer to Appendix C for occupancy hazard classification.
- 2 For dry pipe systems, increase design area by 30 percent.
- 3 Design area may be reduced to limits described in NFPA 13, with approval of the EFD/EFA/PWC (Navy/Marine Corps), District (Army), MAJCOM (Air Force) fire protection engineer, or the AHJ.



5.1.5.4 Rubber Tire Storage. Water demands for these facilities shall be in accordance with NFPA 231D, Storage of Rubber Tires.

5.1.5.5 Aircraft Acoustical Enclosures. Water demands for these facilities shall conform to pars. 4.17 and 4.18.

5.1.5.6 Family Housing. Water demands for these facilities shall conform to par. 4.2. Water demand for family housing shall be the sprinkler water demand plus 250 gpm for hose streams.

5.2 Water Demands for Unsprinklered Facilities. Water demands for buildings and facilities that are not fully sprinklered are based on fire department hose stream requirements.

5.2.1 Hose Stream Demands for Unsprinklered Facilities. Hose stream demands and duration requirements for facilities that are not fully sprinklered are outlined in Appendix D. The following factors affect the water demand and duration and shall be considered to determine the specific demand and duration within a given range in accordance with Appendix D:

- a) Occupancy classification,
- b) Response time by fire department,
- c) Type of construction,
- d) Number of stories,
- e) Separation distances,
- f) Building floor area, and
- g) Fire fighting access.

5.2.1.1 Procedure. The procedure for determining specific demands within a range is provided in Appendix D. This procedure shall be followed to determine the minimum requirements for facilities that are not fully sprinklered.

5.2.1.2 High Demands. When the required fire flow demand exceeds 2000 gpm (126.16 L/s), a cost and benefit analysis shall be conducted to determine if additional fire protection systems, features, or design changes that provide more favorable factors, such as type of construction or sprinkler protection, are more cost effective than providing the required fire flow. Such changes may reduce the required fire flow to a point that it can be provided more economically.

5.2.2 Water Stream Demand for Unsprinklered Special Facilities. Special requirements may apply to certain facilities. Such facilities include ship

berthing and drydock facilities, family housing, POL areas, aircraft parking and refueling areas, and vehicle and yard storage.

5.2.2.1 Ship Berthing and Drydock Facilities. See section 21.0 for water demand requirements for ship berthing and drydock facilities.

5.2.2.2 Family Housing. The water demand for unsprinklered family housing shall be as follows:

- a) One-story - 500 gpm (1,920 L/min) for 90 minutes.
- b) Two-story - 750 gpm (2,820 L/min) for 90 minutes.
- c) Three-story and above - 1,000 gpm (3,780 L/min) for 90 minutes.

5.2.2.3 POL Areas. POL areas shall conform to the following:

a) Aboveground Atmospheric POL Tanks. Table 5.2.2.3.9 provides fire flow rates for non-pressurized POL tanks.

b) Aboveground Pressurized POL Tanks. Table 5.2.2.3.b provides fire flow rates for pressurized POL tanks.

5.2.3 Aircraft Parking and Refueling Facilities. A minimum fire flow rate of 1,000 gpm (3,780 L/min) for a 2-hour duration is to be provided for all such facilities.

5.2.4 Yard and Outdoor Storage. Yard and outdoor storage shall be protected in accordance with NFPA 80A, Protection of Buildings From Exterior Fire Exposures, NFPA 231, and FM Loss Prevention Data Sheet 1-20, Protection Against Fire Exposure. Aisle widths and separation distances shall be maintained to limit the exposure to nearby buildings and to facilitate manual fire fighting operations.

5.2.5 Vehicle Parking Areas. Provide a minimum fire flow rate of 500 gpm (1,920 L/min) for a 2-hour duration shall be provided for all such facilities.

### 5.3 Water Supply Pressure Requirements

5.3.1 Pressure Required. Pressure required for sprinklered facilities shall be the pressure required to meet the total demand and shall be determined by hydraulic calculations. The total demand is the required sum of the domestic demand, sprinkler demand, and hose stream demand.

Table 5.2.2.3.9  
Atmospheric POL Tank Cooling Water

TANK DIAMETER		FIRE FLOW RATE	
FEET	METERS	GPM	L/MIN
0 - 64	0 - 19	500	1,920
65 - 119	20 - 35	750	2,820
120 - 154	36 - 46	1,000	3,780
155 - 199	47 - 61	1,250	4,740
200 or greater	61 or greater	1,500	5,700

Minimum duration: 240 minutes.

Note 1: Allow an additional 500 gpm (1,920 L/min) for each exposed tank, pressure vessel or handling facility within 50 ft (15 m) or one tank diameter, whichever is greater, of the largest tank under consideration.

Note 2: For Navy projects, the maximum water supply for storage tanks shall not exceed 2,500 gpm.

Table 5.2.2.3.b  
Pressurized POL Tank Cooling Water

TANK GROUP SIZE	FIRE FLOW RATE GPM (L/MIN)
Single tank less than 30,000 gallon capacity. (113,550 L)	250 (960)
Single tank more than 30,000 gallon capacity. (113,550 L)	500 (1,920)
2 to 6 tanks, one or more tanks greater than 30,000 gallon capacity. (113,550 L)	500 (1,920)
2 to 6 tanks, each greater than 30,000 gallon capacity. (113,550 L)	1,000 (3,780)
7 or more tanks, each tank less than 30,000 gallon capacity. (113,550 L)	1,000 (3,780)
7 or more tanks, one or more tanks greater than 30,000 gallon capacity. (113,550 L)	1,500 (5,700)

Minimum Duration: 240 minutes

5.4 Quantities of Water Required. Requirements for fire protection water storage are based on the assumption that there will be only one fire at a time. The quantity of water required is equal to the product of the fire protection water demand and the required duration. This quantity represents fire protection requirements only, and shall be available at all times. Water supply for domestic, industrial, and other demands shall be added to these requirements to determine the total amount of water that is necessary at a facility. If the public water system supplying a facility is reliable, provides a minimum of two connections, each providing at least 50 percent of the required capacity, has adequate capacity and pressure to meet water requirements, and continuous reserve storage capacity at least equal to the required fire protection water storage, then no separate water storage facility is required.

5.4.1 Total Storage Capacity. The total stored supply for fire protection purposes shall be sufficient to meet the maximum required fire flow demand for the duration specified.

5.4.2 Reduction in Storage Capacity. In computing the fire protection storage requirement, a reduction in storage capacity is acceptable if an adequate replenishment source is available. Factors that must be evaluated include the reliability of the makeup facility, its sustained flow capacity, its method of operation (automatic or manual), and flow limitations imposed by the capacity of treatment operations.

5.4.3 Replenishment of Storage. The water storage shall be self-replenishing. It shall reach required volume during normal consumption within 48 hours, and with 24 hours curtailing normal consumption.

## 5.5 Sources of Water Supply

5.5.1 Primary Water Supplies. Primary water supplies shall consist of one or a combination of the following:

- a) Two connections to a public water system (one connection is ample for a small activity, such as a Reserve Training Facility).
- b) Elevated tanks or reservoirs.
- c) Multiple pumps with adequate suction supply.

5.5.2 Secondary Water Supplies. Where public water supply is inadequate or unreliable, a secondary supply is required. Secondary supply shall be by gravity tank, pressure tank, booster pumps taking suction from adequate capacity main(s), or fire pumps taking suction from adequate source(s).

## 5.6 Fire Pumps

5.6.1 Requirements. Pumps for fire protection shall have adequate

capacity with reliable power and water supply. This equipment shall conform to requirements of NFPA 20, Installation of Centrifugal Fire Pumps. Fire pumps, drivers and other equipment including automatic accessories shall be listed by UL or approved by FM or listed or classified by a NRTL.

5.6.2 Pump Type. A fire pump may be either a horizontal or vertical shaft centrifugal pump or a vertical shaft turbine pump, whichever is most economical and appropriate for the intended use. A horizontal centrifugal pump in either the horizontal or vertical position shall not be used where suction lift is required. A vertical shaft turbine pump shall be used for suction lift.

5.6.3 Pump Starting Arrangement. Fire pumps shall be arranged to start automatically except that they shall be arranged for manual starting when other available water supply sources are capable of providing demands for automatic sprinkler systems simultaneously with domestic and industrial demands.

5.6.4 Pump Drive. When electric power is economically available from a reliable single power source or from two independent sources in accordance with NFPA 20, pumps shall be electric driven only. A reliable single power source is defined as a power source having an average forced down time, excluding scheduled repairs, which does not exceed 8 consecutive hours for any one incident nor more than 24 hours cumulatively over the last 3 years. When such electrical power supplies are not available, fire pumps shall be diesel driven. Spark ignited internal combustion engines shall not be used to drive fire pumps.

5.6.5 Water Level Controls. Manual controls, double-acting altitude valves, or other automatic devices shall be used to maintain the water level in elevated storage tanks. Altitude valves shall be arranged with bypasses.

5.6.6 Meters. Where meters are installed on water distribution systems, they shall be listed by a NRTL as fire flow meters.

## 5.7 Water Distribution Systems

5.7.1 Mains. The distribution system shall be sized to accommodate fire flows plus domestic and industrial or flushing demands that cannot be restricted during fires. Distribution shall be looped to provide at least 50 percent of the required fire flow in case of a single break. Dead-end mains shall be avoided. Distribution systems shall be designed in accordance with NFPA 24, Installation of Private Fire Service Mains and Their Appurtenances. For Army and Air Force projects, also refer to TM 5-813-5/AFM 88-10, TITLE, Vol. 5. For Navy projects, also refer to MIL-HDBK-1005/7, Water Supply Systems.

5.7.2 Valves. Control valves shall be provided in each source of water supply, such as tanks and pumps. A sufficient number of sectional valves

shall be provided so that not more than a combined total of five hydrants and sprinkler systems, or not more than three sprinkler systems shall be out of service due to a single break. Control valves shall be either post-indicating or outside-stem-and-yoke types. Sectional valves may be key-operated type. New valves shall be right-hand valves.

5.7.2.1 Drawings. Drawings shall be provided showing control and sectional valve locations and valve sizes. Existing left-hand valves shall be clearly indicated on drawings.

5.7.3 Hydrants. Fire hydrants shall be UL listed or FM approved or listed or classified by a NRTL and shall have two 2-1/2-inch (64 mm) hose outlets and one 4-inch (102 mm) or 4-1/2-inch (114 mm) suction connection with national standard fire hose threads in accordance with NFPA 24 and NFPA 1963, Screw Threads and Gaskets for Fire Hose Connections. Wet-barrel or California-type hydrants are preferable in areas where there is no danger of freezing. Dry barrel or traffic-type hydrants shall be used in areas where there is a danger of freezing. Hydrants shall be aboveground type. If local municipal departments use nonstandard connections, adapters shall be made and supplied to engine companies that respond to DOD installation fires. In DOD installations serviced by only local fire departments, hydrant hose threads shall be meet local requirements.

Note 1: Overseas bases with current below grade hydrants in accordance with local national policy.

Note 2: The one 4-inch (102 mm) suction connection only applies to Navy projects.

5.7.3.1 Installation Requirements. Hydrants shall be installed adjacent to paved areas, not closer than 3 feet (1 m) and not farther than 7 feet (2 m) from the roadway shoulder or curb line, where they will be accessible to fire department apparatus. Hydrants shall be installed with not less than 6-inch (152 mm) connection to the supply main, and valved at the connection. Barrels shall be long enough to permit at least 18-inch (457 mm) clearance between the center of the 4-1/2-inch (114 mm) pumper connection and grade. The ground shall be graded so that any surface drainage is away from the hydrant. Installation shall be in accordance with NFPA 24, except as modified herein. Pumper connection should be perpendicular to the street to allow straight lined connection to the pumper.

5.7.3.2 Spacing Requirements. A sufficient number of hydrants shall be provided so that hose stream demand can be met without taking more than 1,250 gpm (4,700 L/min) from any single hydrant. Hydrants shall also be spaced in accordance with the following requirements:

a) Parts of the building exterior shall be reached by hose lays of not over 350 feet (110 m) with consideration given to accessibility and obstructions. For new construction, at least one hydrant shall be located

within 150 feet (45.72 m) of fire department connections.

b) Hydrants protecting warehouses shall be spaced a maximum of 400 feet (120 m) apart.

c) Hydrants protecting aircraft hangars shall be located at 300 foot (90 m) maximum intervals, and there shall be at least one hydrant at each corner of the hangar.

d) Hydrants protecting POL storage and distribution facilities shall be spaced at 300 foot (91.44 m) maximum intervals.

e) Hydrants protecting aircraft parking and servicing aprons shall be spaced at 300 foot (91.44 m) maximum intervals along one side.

5.7.3.3 Hydrant Protection. Hydrants located adjacent to parking areas or other vehicle traffic areas shall be protected by bollards.

5.7.4 Pressure-Regulating Valves (PRVs). PRVs are restricted in use on fire protection water systems by NFPA 24. Where essential, PRVs shall be installed on individual services rather than on the main piping. Where PRVs are provided in mains supplying systems or portions of systems with fire hydrants, automatic sprinkler systems, or other installed fire protection, the following features shall be provided to safeguard against failures and to facilitate maintenance:

- a) Control valves on each side of the PRVs.
- b) Bypasses around PRVs.



Section 6: FIRE EXTINGUISHING SYSTEMS

6.1 Automatic Sprinkler Systems

6.1.1 Characteristics. Properly engineered and installed automatic sprinkler systems are designed to detect the presence of fire, activate both local and remote (fire department) alarms, and distribute water in sufficient quantity to either control or extinguish the fire. Sprinkler specifications shall include provisions regarding sprinkler contractor qualifications.

6.1.2 Application Requirements. The following requirements are in addition to the sprinkler requirements listed in Section 4, and sprinkler protection required by applicable NFPA codes and standards specifically referenced herein. Sprinkler protection shall be provided in the following facilities:

a) Any new building over 15,000 square feet gross floor area unless permitted by chapter 4, Special Occupancies and Hazards of this handbook.

b) Any facility whose operational impairment would reduce the operational readiness and responsiveness of strategic or tactical defensive and offensive capability.

c) Any facility containing direct war fighting assets including combat aircraft, naval vessels, and tactical vehicles.

d) Technical, industrial, and commercial type buildings, including hangars, shops, and laboratories used for production, repair, experimental testing, inspection, electronics overhaul facilities, or processes, services, or equipment involved with mission support.

e) Facilities containing significant amounts of critical equipment or equipment which requires a long lead time to replace. Such equipment or material includes training devices such as simulators for flight, navigation, weapons, radar, or gunnery training.

f) Buildings four stories or more in height, measured from the lowest grade, regardless of occupancy.

g) Facilities and contents of high monetary value (e.g., a combined facility and content replacement value exceeding 2.5 million dollars.)

h) Windowless structures in accordance with NFPA 101.

i) Underground structures.

- j) Commissaries and exchanges over 8,000 square feet (743.49 m<sup>2</sup>).
- k) New multi-story buildings which are accessible to the physically disabled.
- l) Clubs including officer, non-commissioned officer, and enlisted; bowling centers, craft shops, including auto hobby shops, woodworking shops; and similar facilities.
- m) Facilities of Type III, Type IV, and Type V construction over two stories in height.
- n) Child development centers.
- o) Renovation of existing buildings of Type III, Type IV and Type V construction over 8,000 square feet.

6.1.3 Fire Administration Authorization Act of 1992. In addition to the requirements above, automatic sprinklers shall be provided in multi-family housing and federal employee office buildings. For sprinkler requirements in multi-family housing, refer to par. 4.2. For new or renovated Federal employee office buildings under four stories in height, provide sprinklers in hazardous areas as defined by NFPA 101. For new or renovated Federal employee office buildings four or more stories in height, comply with par. 6.1.2, item f). Federal employee office buildings are defined as any building with 25 or more Federal employees.

6.1.4 Design Requirements. Sprinkler systems shall use equipment and devices listed by a NRTL. Sprinkler systems for light, ordinary, and extra hazard occupancies shall follow applicable criteria set forth in NFPA 13 and NFPA 16, Deluge Foam-Water Sprinkler and Foam-Water Spray Systems. Sprinkler water requirements are stipulated in chapter 5, Water Supply For Fire Protection of this handbook.

6.1.4.1 Hydraulic Calculations. New sprinkler systems with areas over 1500 square feet shall be designed using hydraulic calculations. Use of pipe schedule designs is strongly discouraged for any sprinkler system. Required discharge densities and areas of discharge operation are given in Table 5.1.2. Calculations shall follow the format of NFPA 13. Pipe friction losses and equivalent lengths of pipe for fittings and valves shall be in accordance with NFPA 13.

Note: Additions to existing pipe schedule systems may be designed using the pipe schedule method.

6.1.4.2 Sprinkler Coverage. In buildings protected by automatic sprinklers, sprinklers shall provide coverage throughout 100 percent of the building. This includes, but is not limited to, telephone rooms, electrical equipment rooms, boiler rooms, switchgear rooms, transformer rooms, and other electrical

and mechanical spaces. Coverage per sprinkler shall be in accordance with NFPA 13, except that it shall not exceed 225 square feet for light hazard occupancies or 130 square feet for ordinary hazard.

Exception 1: Facilities that are designed in accordance with NFPA 13R and NFPA 13D.

Exception 2: Sprinklers may be omitted from small rooms which are exempted for specific occupancies in accordance with NFPA 101.

6.1.4.3 Connections to Exterior Fire Reporting Systems. Where sprinklers are located at facilities with station or base fire reporting systems, the sprinkler systems shall be electrically connected to the fire reporting system for transmission of sprinkler water flow alarms.

6.1.4.4 Strainers. Where water conditions warrant, or systems involve high velocity flows, riser strainers shall be installed.

6.1.5 Sprinkler Shop Drawings. Sprinkler shop drawings shall be prepared and submitted by a qualified sprinkler contractor.

## 6.2 Water Spray Systems

6.2.1 Requirements. Design requirements for water spray systems shall conform to NFPA 15, Water Spray Fixed Systems For Fire Protection.

## 6.3 Foam Systems

6.3.1 Requirements. The NFPA Fire Protection Handbook and FM Loss Prevention Data Sheets contain data and information concerning installation and arrangement of foam systems for various types of Class B (flammable liquids) hazards. Foam installations shall be in accordance with NFPA 11, NFPA 11A, Medium- and High-Expansion Foam Systems, NFPA 16, and NFPA 16A, Installation of Closed-Head Foam-Water Sprinkler Systems.

6.4 Standpipe Systems. When required, standpipe systems shall be installed in accordance with NFPA 14, Installation of Standpipe and Hose Systems.

Exception: Residual pressure requirements specified in NFPA 14 may be omitted for buildings under 150 feet in height where fire department apparatus are expected to boost pressure in standpipe systems.

#### 6.4.1 Class I Standpipe Systems

a) Class I standpipe systems shall be provided in the stair towers of buildings four stories or more in height. These systems shall not include hoses.

b) Class I standpipe systems shall also be provided in facilities where it is not practical to reach major portions of the building with fire fighting hose lines extended from the exterior of the building, regardless of building height.

6.4.2 Class II and Class III Standpipes. Class II and Class III standpipes shall not be permitted.

#### 6.5 Dry Chemical Extinguishing Systems

6.5.1 Application. Fixed dry chemical systems are approved for protection of certain types of special occupancies, hazards, and facilities, such as cooking surfaces, cooking exhaust systems, dip tanks, and other operations involving flammable liquids.

6.5.2 Design Requirement. Dry chemical systems shall conform to NFPA 17, Dry Chemical Extinguishing Systems.

6.5.3 Limitations. Dry chemical agents should not be used to protect sensitive electronics.

#### 6.6 Carbon Dioxide Systems

6.6.1 Application. Carbon dioxide systems are normally effective against flammable liquid (Class B) and electrical (Class C) fires. New systems are not authorized in occupiable areas.

6.6.2 Design Requirements. Carbon dioxide systems shall conform to NFPA 12, Carbon Dioxide Extinguishing Systems.

#### 6.7 Halon 1301 Systems

6.7.1 Application. Installation of new Halon 1301 systems is prohibited except by special approval of the AHJ in the component office listed in par. 1.3.5.

6.8 Portable Fire Extinguishers. Portable fire extinguishers shall be provided in accordance with NFPA 10, Portable Fire Extinguishers. Extinguishers should be provided as part of the construction contract.

6.8.1 Extinguisher Cabinets. Recessed or semi-recessed enclosed cabinets shall be provided in all facilities except storage and industrial occupancies.

6.9 Wet Chemical Extinguishing Systems

6.9.1 Application. Fixed wet chemical systems are suitable for protection of certain types of special occupancies, hazards, and facilities, such as cooking surfaces, cooking exhaust systems, and dip tanks.

6.9.2 Design Requirements. Wet chemical systems shall conform to NFPA 17A, Wet-Chemical Extinguishing Systems.

Section 7: FIRE ALARM SYSTEMS

7.1 Fire Alarm Reporting Systems

7.1.1 Applications. Fire alarm reporting systems are the base-wide reporting systems which connect the building fire alarm control panel(s) and street boxes to the base fire department. Install fire alarm reporting systems in occupied areas and buildings as a means for automatically and manually reporting fires to station or base fire departments or to other central alarm locations as required to implement fire fighting operations and emergency action. Required systems are to be telegraphic, telephonic, radio, or supervised conductor types. Consider compatibility of extensions of fire reporting systems with existing equipment. Do not provide fire reporting systems at isolated small areas, ammunition and ordnance storage, and similar restricted areas where personnel reporting systems are not generally expected to be present. Do not require reporting systems in family housing areas that are remote from the main built-up area of the activity or station.

7.1.2 Requirements. Alarm reporting systems shall conform to NFPA 1221, Installation, Maintenance, and Use of Public Fire Service Communication Systems or NFPA 72, and shall provide the following where applicable:

- a) Transmission of coded signals to fire department headquarters and other central locations;
- b) Permanent record of alarm signal, time, and date;
- c) Automatic supervision of alarm initiating circuits;
- d) Automatic conditioning for transmission of signals under line fault conditions or signal ground, single open, or both; and
- e) Automatic testing of radio signaling devices.

7.2 Fire Alarm Evacuation Systems

7.2.1 Applications. Fire alarm evacuation systems shall be provided in the following locations:

- a) Buildings required by NFPA 101.
- b) Buildings with an occupant load of 200 or more.
- c) Multi-story buildings with an occupant load of 20 persons or more above or below the level of exit discharge.
- d) UOPH, UEPH, and similar sleeping facilities. Personnel housing and similar lodging facilities.

e) Buildings requiring automatic detection or suppression systems.

7.2.2 Requirements. These systems consist primarily of manual pull stations and fire alarm indicating devices. Automatic alarm initiating devices such as detectors and water flow alarms shall be connected to these systems when provided. Fire alarm systems shall be connected to a central alarm location, fire department, or alarm monitoring location. Building fire alarm evacuation systems shall be installed in accordance with NFPA 72. Fire alarm systems shall be independent, stand-alone systems which are not an integral part of a security, an Energy Monitoring and Control System (EMCS), or other systems. Fire alarm systems may be connected to security systems or an EMCS for monitoring purposes only, but shall in no way rely on any components of those other systems for operation.

Exception: Existing fire alarm systems which are controlled by an EMCS.

7.2.2.1 Requirements of the UFAS and ADA. Placement and installation of audiovisual warning devices shall be in accordance with the UFAS and the ADA.

### 7.3 Automatic Fire Detection Systems

7.3.1 Applications. Fire detection systems shall be provided in areas required by this handbook and should be limited to these applications. Detection systems shall be provided in areas requiring fire detection by NFPA standards and specific criteria contained herein.

7.3.2 Requirements. Fire detection systems shall conform to the applicable provisions of NFPA 72, the UFAS and the ADA. Detection systems shall be arranged to alert building occupants and to transmit a signal to a constantly attended location. Fire detection systems shall be independent, stand-alone systems which are not an integral part of a security system, an EMCS, or other systems. Fire detection systems may be connected to security systems or an EMCS for monitoring purposes only, but shall in no way rely on any components of those other systems for operation.

Exception: Existing fire detection systems which are controlled by an EMCS.

7.3.3 Detection Systems. Detection systems, especially smoke detection systems, require significant maintenance. It is critical that the required detectors are properly installed and maintained. Providing detectors in locations that are not required increases the already high maintenance costs of alarm systems and strains the maintenance program for critical detection systems. If a facility warrants protection and criteria does not require detection, protection should be accomplished by sprinkler protection, preferably wet pipe sprinklers which provide superior protection with little maintenance.

Note: Battery-powered smoke detectors are not approved.

7.3.3.1 Smoke Detection and Destratification Fans. The area of protection for smoke detection devices permitted by NFPA 72 shall be reduced by 50 percent where destratification fans are used.

Exception: This restriction does not apply to thermal or flame detection devices or to residential occupancies.

7.3.4 Addressable Interior Fire Alarm Systems. For large systems, the designer should consider using addressable systems to minimize installation and maintenance costs.

Note 1: For Air Force projects, unless automatic suppression systems are required herein or by other guidance, complete automatic fire detection systems and portable fire extinguishers constitute the minimum level of acceptable fire protection for new construction. Smoke detectors in return air plenums do not meet this minimum level.

Note 2: For Air Force projects, when a system is divided into four or more zones, a graphic annunciator constructed of engraved phenolic or metal material shall be installed at a location determined by the host fire department.

7.4 Shop Drawings for Fire Alarm Systems. Fire alarm drawings shall be prepared and submitted by a qualified fire alarm contractor. Shop drawings are required to be submitted for fire alarm reporting systems, fire alarm evacuation systems, and automatic fire detection systems.



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APPENDIX A  
 UNIFORM BUILDING CODE AND NFPA 220 EQUIVALENTS

UBC	NFPA 220
Type I (FR)	Type I (443) Type I (332)
Type II (FR)	Type II (222)
Type II (One Hour)	Type II (111)
Type II (N)	Type II (000)
Type III (One Hour)	Type III (211)
Type III (N)	Type III (200)
Type IV (HT)	Type IV (2HH)
Type V (One Hour)	Type V (111)
Type V (N)	Type V (000)

APPENDIX B  
COMMON CLASSIFICATION OF OCCUPANCIES FOR DOD

1. Classification of Occupancies. To assist the user of this handbook, selected DOD facilities are listed by specific UBC occupancy classifications. These classifications are based on the norm for a majority of DOD installations. An installation may encounter unique conditions and may require a different classification for an individual facility.

A. Group A Occupancies

(1) Division 1

(2) Division 2

(3) Division 2.1: Chapels, churches, clubs (officer, non-commissioned officer, enlisted), recreation centers, theaters, gymnasiums, fitness centers, etc.

(4) Division 3: Education centers and training facilities.

(5) Division 4

B. Group B Occupancies

(1) Division 1

(2) Division 2: Air rework and depot repair facility, exchanges, commissaries, office buildings, medical and dental clinics, wood hobby shops, dining facilities, general purpose warehouses, etc.

(3) Division 3: Aircraft hangars.

(4) Division 4

C. Group E Occupancies

(1) Division 1: DOD dependent schools.

(2) Division 2

(3) Division 3: Child development facilities.

D. Group H Occupancies

(1) Division 1: Ordnance plants.

(2) Division 2: Use of flammable and combustible liquids.

APPENDIX B (Continued)

- (3) Division 3: Storage of flammable and combustible liquids.
- (4) Division 4: Vehicle repair garages and auto hobby shops.
- (5) Division 5: Aircraft repair hangars utilizing welding or highly flammable liquids, aircraft fuel cell and system repair facilities, etc.
- (6) Division 6
- (7) Division 7: Flammable and combustible warehouses.

E. Group I Occupancies

- (1) Division 1.1: Hospitals.
- (2) Division 1.2: Medical and dental clinics with patients incapable of self preservation.
- (3) Division 2
- (4) Division 3: Detention and correctional facilities.

F. Group M Occupancies

- (1) Division 1
- (2) Division 2

APPENDIX C  
OCCUPANCY HAZARD CLASSIFICATION FOR DETERMINING AUTOMATIC  
SPRINKLER DENSITIES AND HOSE STREAM DEMANDS

1. Classification of Occupancies. The principal occupancy classifications are light hazard, ordinary hazard, and extra hazard. Listed below are the classifications with examples of common occupancies listed under each. The basic hazard classification of an occupancy does not define the fire hazard present in all areas of that occupancy. If more hazardous processes or areas exist within a given occupancy, they shall be protected in accordance with the fire protection requirements pertaining to the hazard classification of that area. The classification for unlisted occupancies shall be determined from the definitions or by comparison with one of the listed occupancies.

A. Light Hazard Occupancies. Occupancies or portions of occupancies where the quantity and combustibility of the contents are low and fires with relatively low rates of heat release are expected. Small, scattered amounts of flammable liquids in closed containers are allowable in quantities not exceeding 5 gallons (20 L). The following are examples of light hazard occupancies:

- (1) Churches and chapels
- (2) Gymnasiums
- (3) Clinics (dental, outpatient, patient areas only)
- (4) Hospitals
- (5) Data processing areas
- (6) Mess areas
- (7) Dispensaries (patient areas only)
- (8) Drill halls (not used for storage or exhibition)
- (9) Disciplinary barracks
- (10) Offices
- (11) Child development centers

B. Ordinary Hazard Group 1 Occupancies. Occupancies or portions of occupancies where combustibility is low, quantity of combustibles is moderate, stockpiles of combustibles do not exceed 8 feet (2.5 m), and fires with

APPENDIX C (Continued)

moderate rates of heat release are expected. Modest, scattered amounts of flammable liquid, in closed containers are allowable in quantities not to exceed 20 gallons (75 L). The following are examples of Ordinary Group 1 occupancies:

- (1) Armories
- (2) Sheet metal shops
- (3) Bowling alleys
- (4) Ship fitting shops
- (5) Clubs (officer, enlisted personnel, etc.)
- (6) Kitchens and bakery
- (7) Small stores
- (8) Theaters and auditoriums
- (9) Welding shops
- (10) Forge shops
- (11) Laundries
- (12) Automobile parking garage
- (13) Electronics assembly and repair

C. Ordinary Hazard Group 2 Occupancies. Occupancies or portion of occupancies where quantity and combustibility of contents is moderate, stock piles do not exceed 12 feet (4 m), and fires with moderate rate of heat release are expected. Moderate, scattered amounts of flammable liquids in closed containers are allowable in quantities not to exceed 50 gallon (200 L). Small amounts of flammable liquids may be exposed as required by normal operations. The following are examples of Ordinary Hazard Group 2 Occupancies:

- (1) Commissaries
- (2) Exchanges
- (3) Air rework facilities
- (4) Boiler rooms

- (5) Electrical maintenance shops
- (6) Engine and generator rooms
- (7) Laboratories
- (8) Refrigeration and air compressor rooms

APPENDIX C (Continued)

- (9) Switchgear rooms
- (10) Machine rooms
- (11) Printing shops (using inks having flash points above 110 degrees F [44 degrees C])
- (12) Libraries
- (13) Piers and wharves
- (14) Vehicle repair garages
- (15) Woodworking shops

D. Special Occupancies. Special occupancies are facilities or areas which cannot be assigned a specific classification because of special protection requirements. This classification includes, but is not restricted to, the following occupancies:

- (1) Flammable and combustible liquids
- (2) Aircraft hangars
- (3) Engine test cells
- (4) Missile assembly
- (5) Ordnance plants
- (6) Rubber tile storage
- (7) Warehouses (high piled or high rack storage)
- (8) Foam rubber or plastic storage

Note: Refer to Section 4 and the appropriate NFPA codes and standards.

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APPENDIX D  
PROCEDURE FOR DETERMINING  
FIRE FLOW DEMAND FOR UNSPRINKLERED FACILITIES

1. The following procedure shall be used to determine the required fire flow demand and duration for buildings that are not fully sprinklered.

A. Step One - Determine the Classification of Occupancy. Appendix C lists the classifications of occupancy hazard as Light, Ordinary Group 1, Ordinary Group 2, and Extra.

B. Step Two - Determine the Water Demand Weighted Factors. The table is divided into three weighted value categories for fire flow and duration in each occupancy classification. These categories are determined from the values established in the six factors discussed below. The final value is determined by adding the values obtained from all six factors. See sample calculations in Appendix D, par. D.

(1) Weighted Factors. The six factors to be assigned weighted values are as follows:

(a) Response Time by Fire Department. Most installations have on-site fire departments which are familiar with hazards of buildings within the facility. The longer the response time for manual fire fighting, the greater the water demand and duration. Traffic flow is a factor and traffic congestion is equivalent to a longer response distance. The fire department response weighing factors are as follows:

Type of Fire Department Response	Value
On-site (within 1 mile)	1
On-site (over 1 mile but less than 3 miles)	2
On-site (3 miles or greater)	3
Off-site (less than 2 miles)	2
Off-site (2 miles or greater)	3

(b) Type of Construction. Par. 2.1.4 requires that type of construction comply with the UBC. As structural fire integrity is reduced, water demand and duration will become greater. In addition, the combustibility of construction will add to the water demand for an unsprinklered building. The type of construction weighted values are as follows:

## APPENDIX D (Continued)

Type of Construction	Value
Type I	1
Type II	2
Type III	3
Type IV	2
Type V	5

(c) Number of Stories. Fire fighting is more difficult for multistory buildings. Furthermore, fire spreads faster vertically than horizontally. Fire in multistory buildings are more difficult to contain and have higher water demands. One-story buildings with high ceiling heights (20 feet or greater) shall be considered multistory. The weighted values for number of stories of a facility are as follows:

Number of Stories	Value
Single Story	1
Two or more stories	2 (plus 1 point for each floor more than two; maximum 6 points)

(d) Separation Distances. The model building codes and NFPA 80A provide that a separation distance of 60 feet or more does not require protection of exterior wall from exposure. The codes indicate that a separation distance of 20 feet or less requires one hour or more fire resistance construction. Water demand for protecting exposed facilities increases as separation distance decrease. In addition, exterior fire fighting is hampered as building separation distances are reduced. The weighted values for the building separation distances are as follows:

Separation Distances (Feet)	Value
60 or more	1
21 to 59	2
20 or less	4



## APPENDIX D (Continued)

(e) Building Floor Area. Fire fighting water demands are higher for larger unsprinklered buildings. The weighted values for the building floor area factor are as follows:

Area (Square Feet)	Value
7500 or less	1
7501 to 15,000	2
15,001 to 25,000	3
25,001 to 40,000	4
Greater than 40,000	5

(f) Fire Fighting Access. Studies conducted by fire departments have demonstrated that a responding engine company shall be within 180 feet of a fire to effectively control it. This distance is based on the use of a 30-foot stream of water and 150 feet of fire hose. The fire hose distance must be measured as the hose would lay over the terrain from the fire apparatus. Ideally, this distance should be to any part of the first three stories of a building, either by use of ground ladders through windows or by use of windows. The efficiency of the manual approach is reduced as greater hose connections are required. The weighted values for fire fighting access based on hose layout distances are as follows:

Maximum Hose Lay-out (Feet) (First three stories)	Value
180 or less	1
181 to 230	2
Greater than 230	4

C. Step Three - Determine Fire Flow and Duration. Using the occupancy classification and summation of weighted values of the six factors, select the required water demand for fire flow and duration from Table D1.

## APPENDIX D (Continued)

TABLE D1  
WATER DEMANDS FOR UNSPRINKLERED FACILITIES

TOTAL WEIGHTED VALUE						
Occupancy Hazard Classification	Fire Flows (gpm at 20 psi residual pressure)			Duration (minutes)		
	6-10	11-15	16+	6-10	11-15	16+
Light	750	1125	1500	60	90	120
Ordinary Group 1	1000	1500	2000	90	120	150
Ordinary Group 2	1500	2250	3000	90	120	150
Extra	2500	3750	5000	150	195	240

## APPENDIX D (Continued)

## D. Examples Calculations

## (1) Administration Office Building (Light Hazard)

Factors	Values
1. Fire department response On-site (within 1 mile)	1
2. Type of Construction: Type II	2
3. Number of Stories: Two stories	2
4. Separation Distance: 30 feet	2
5. Building Floor Area: 22,000 square feet	3
6. Fire fighting Access: 170 feet	2
	---
Total Weighing Value	12

Per Table D1: 1125 gpm for 90 minutes

## (2) Welding Shop (Ordinary Group 1)

Factors	Values
1. Fire department response Off-site (within 2 mile)	2
2. Type of Construction: Type II	3
3. Number of Stories: Single story	1
4. Separation Distance: 20 feet	4
5. Building Floor Area: 22,000 square feet	3
6. Fire fighting Access: 250 feet	4
	---
Total Weighing Value	17

Per Table D1: 2000 gpm for 150 minutes

## (3) Barracks (Light Hazard)

## APPENDIX D (Continued)

Factors	Values
1. Fire department response: On-site (more than 3 mile)	3
2. Type of Construction: Type II	2
3. Number of Stories: Three stories	3
4. Separation Distance: 40 feet	2
5. Building Floor Area: 9,000 square feet	2
6. Fire fighting Access: 200 feet	2 ---
Total Weighing Value	14

Per Table 5.2.1: 1125 gpm for 90 minutes

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COSTODIAN  
NAVY - YD2

PREPARING ACTIVITY  
NAVY - YD2

PROJECT NO.  
FACR-1120

22 April 1993

MEMORANDUM

From: OICC Far East Code 04F  
To: OICC Far East Code 90

Subj: NEW FIRE SPRINKLER AND HARD WIRED DETECTORS REQUIREMENTS  
FOR GOVERNMENT HOUSING (PUBLIC LAW 102-522)

1. The purpose of this memo is to inform you that a new Fire Administration Authorization Act was introduced on October 26 1992. The Act requires that all the government housing be protected with hard-wire smoke detectors and automatic sprinkler system.

2. An official Design Policy Letter will be released in the near future by NAVFAC to ensure a consistent approach for complying with the new law. The following is the summary of PACDIV Code 408's technical positions based on advance information from NAVFAC 04F:

a. For BEQs, BOQs and Transient Lodge Facilities:

(1) Sprinkler protection will be required regardless of type of construction or number of floor levels.

(2) Smoke detectors are currently required and are installed in all new construction projects.

b. For Single, Duplex, and Multifamily Housing Facilities

(1) Sprinkler protection will be required regardless of type of construction or number of floor levels.

(2) For Leased or rental housing in Japan, Okinawa and Korea, sprinkler protection will not be required as a practical matter.

(3) Hard-wired smoke detectors with battery back-up will be required in all family housing units throughout PACDIV's area of geographical cognizance.

(4) Smoke detectors will be required in each sleeping room and at the top and bottom of interior stairways.\*

\* This will a new requirement in NFPA 74, Household Fire Warning Equipment, 1994 edition.

Sprinkler and smoke detectors requirements should be included in all renovation projects which exceed 50% of replacement value.

3. The issue on the existing housing facilities has not been determined, yet. Hopefully, this issue will be directly addressed in the upcoming NAVFAC DPL. I will keep you updated on the release of the new DPL.

4. If you have any further questions, please call me ext. 7981.

A handwritten signature in black ink, appearing to read "Douglas K. Kim". The signature is fluid and cursive, with the first name "Douglas" being the most prominent.

**Douglas K. Kim**  
Fire Protection Engineer

copy to:  
OICC Far East Code 00  
PACDIV Code 408 (J. Conklin)  
PWC Code 30  
PWC Code 100  
PWC Code 108  
PWC Code 160  
PWC Code 400  
CFAY Fire Department

## APPENDIX K: VALUE ENGINEERING

1. PACNAVFACENGCOM VALUE ENGINEERING BULLETIN of June 1991





# VALUE ENGINEERING

PACIFIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
JUNE 1991

## II. INTRODUCTION

The original Value Engineering Bulletin was published in June 1987. It contained information on re-occurring VE ideas that were implemented as a result of formal VE studies conducted during design or were approved for installation during construction. We intended to publish updates periodically as new ideas were identified and implemented. Bulletin updates were also to include additional information on ideas contained in previous editions. This is the first published update of the Bulletin. We have found that many of the ideas addressed in the original publication are still valid. We have added additional reoccurring VE ideas from the studies that we conducted in the intervening years since the Bulletin was first published as well as information contained in the NAVFACENGCOM VE data base distributed in the Construction Criteria Base (CCB) CD ROM disks. This data base contains over 12,000 VE proposals from 600 VE studies conducted by the Navy. Although the vast majority of VE proposals in our studies are project specific, general guidance can be extracted from each one of them. Many were the result of defective project scopes or situations where the designer "forced" the design to conform to a preconceived design concept. The VE ideas that these situations generated usually increased project function, and reduced risk and life-cycle costs.

Copies of this Bulletin should be given to all designers prior to the start of the preliminary or design concept stage of design. The Bulletin should also be referenced in AE scopes of work.

Most of the ideas listed are simple and straight forward and because of their simplicity, you might question if our designers have to be reminded to consider them. The results of over 200 VE studies completed by PACNAVFACENGCOM to date indicate that the answer to this question is yes. Often our designers do not have the time nor the design fee to study multiple options when they design a project. Also, they are sometimes directed to incorporate inappropriate design features in the project by the user and the design agent. It is therefore necessary to remind our designers of potential alternates to the systems that are being incorporated in their projects.

The Naval Facilities Engineering Command has recently made a strong commitment to provide quality services and products to all of our customers. The value engineering program has therefore had to make a sometimes painful switch from cost cutting to value improvement. This policy fits in with my personal philosophy. That is why the original VE Bulletin did not contain common cost cutting proposals such as: delete gutters, use epoxy paint in lieu of ceramic tile, use direct buried power cable, use timber construction, etc. Quality does not mean "goldplating" however. Performance verses cost must always be evaluated. It isn't reasonable nor was it ever reasonable to pay a dollar for 50 cents worth of function. Our Command has also made a strong commitment to use commercial products and specifications where they will not degrade our military mission. This edition of the Bulletin contains some VE ideas that are commonly used in the private sector but not accepted by the Navy in the past.

The VE ideas presented are grouped by design discipline. They are duplicated in the appropriate sections when they apply to more than one discipline.

Comments, corrections and additional VE ideas are solicited. Forward your comments to PACNAVFACENGCOM Code 04B, Pearl Harbor, Hawaii 96860-7300 or call me at (808) 474-5391 if you want to discuss this Bulletin or the Navy's VE program in general. Full credit will be given to all contributors to this Bulletin.

*Michael Koga*

## **SUMMARY OF VE IDEAS**

### **A. ARCHITECTURAL**

#### **1. VE Idea: Delete parapets.**

**Discussion:** Buildings with parapets are in conflict with NAVFAC design guidance. We continue to see designs that have roof parapets because designers appear to like their architectural appearance in spite of roofing, waterproofing and drainage problems that go along with this building system.

#### **2. VE Idea: Use pre-finished metal roofing.**

**Discussion:** Pre-finished metal roofing has proven to be a relatively low cost durable roofing system. This type of roofing has been used successfully on roof slopes as low as 1" in 12" with standing seam roofing or roofing with sealed joints. Pre-finished metal roofing is the preferred roofing system for projects in the Philippines and in many remote areas.

#### **3. VE Idea: Use exterior insulation system**

**Discussion:** Exterior building insulation systems such as "Drivit" placed on concrete or masonry have been shown to have a life cycle cost advantage over furred drywall and batt insulation. The system will eliminate installation of easily damaged drywall on the interior side of exterior building walls, improve moisture resistance of masonry walls and eliminate periodic repainting because it has an integral color coat.

#### **4. VE Idea: Use multistory construction where feasible.**

**Discussion:** Low rise multistory construction up to 4 stories in height will generally reduce building unit costs. Multistory construction up to 15 stories is also cost effective if special foundation requirements or other unique site conditions can offset the high cost of elevators and elevator maintenance.

#### **5. VE Idea: Use pre-engineered metal buildings**

**Discussion:** Pre-engineered metal buildings are highly engineered to make them efficient and economical. They also benefit from the economy of assembly line manufacturing

techniques. Pre-engineered buildings can be enclosed by masonry walls and can incorporate many architectural features that make them virtually indistinguishable from custom designed buildings.

6. VE Idea: Delete provisions for future expansion.

Discussion: Many projects incorporate expensive features to provide for future un-programmed building expansion. Some examples of these features are: (1) installation of roof parapet, sloped concrete topping and internal roof drain system (estimated cost \$250k) to allow for a future second story building addition; (2) use of a beam and column structural system with non-load bearing masonry curtain walls to allow horizontal building expansion in all directions (estimated cost \$650k); and (3) construction of 800 square feet of additional building floor area, engine generator pad and other supporting utilities for installation of a future fourth engine generator (estimated cost \$60k).

7. VE Idea: Reduce landscaping.

Discussion: Lush landscaping is a nice amenity that can improve the habitability of a facility or conceal poor or inappropriate architectural features. Extensive landscaping is a high first cost, high maintenance item that is inappropriate on U.S. Navy projects. Coconut trees, in particular, are high maintenance items. Reduced landscaping also makes it feasible to eliminate or reduce irrigation systems particularly where native vegetation is selected.

8. VE Idea: Reduce building height.

Discussion: Reducing building heights to the minimum required to meet operational and functional needs will reduce construction and maintenance cost over the life of the building.

9. VE Idea: Use skylights to reduce artificial lighting requirements.

Discussion: Incorporating skylights in building design will increase initial

construction costs but will allow artificial lighting to be reduced on sunny days. This feature can generate significant energy savings over the life of the project. Skylights may not provide acceptable light quality and light levels depending on the amount and orientation of sunlight available. Also, skylights are a potential source of roof leaks, so good, watertight, architectural detailing is required. Zoned or multiple switching of lights should be incorporated in the lighting system to allow staged reduction in artificial lighting levels.

10. VE Idea: Simplify floor plan.

Discussion: Complicated floor plans when they are not well coordinated with building utility and structural systems can increase cost and risk. For example, toilets and other rooms that require piping should be consolidated or stacked and should be proximate to exterior connections to reduce piping runs. Buildings with complicated structural systems like hip roofs should have a regular footprint. Supporting columns and walls should be carried directly down to foundations.

11. VE Idea: Use durable floor covering

Discussion: Vinyl composition floor tile is a durable and attractive floor covering that has proven value. Other floor covering systems such as sheet vinyl, carpet, and ceramic tile are now more popular. Each of these alternate floor coverings are attractive and have special characteristics that make them the choice in special situations. Sheet vinyl is attractive and provides a seamless covering; carpet is very attractive and provides good acoustical qualities; ceramic tile is attractive, durable, and can be used in wet areas. These alternate materials are often more costly and generally have higher maintenance costs. Carpet, in particular, requires high maintenance and frequent replacement. Ceramic tile should be retained in public toilets and quarry tile should be used in food preparation areas. Bare or architectural concrete is often satisfactory in laundry and vending areas.

12. VE Idea: Investigate the cost of local building materials

Discussion: Often using local building materials in a project will reduce cost and improve

function. Some examples are: 1) cement lath and plaster is less costly than gypsum drywall ceilings in the Philippines, 2) concrete construction is normally less costly than steel where steel is imported and local aggregates are available, 3) pre-cast concrete or tilt-up construction is normally cheaper than CMU where CMU has to be imported, 5) Philippine fabricated marble is less costly in the Philippines than ceramic tile that meets ANSI specifications.

VE Idea: Delete expensive architectural features where they do not provide function.

Discussion: The U.S. Navy design philosophy is to design and construct economical, functional facilities that are easy to maintain and cheap to operate, and that blend in with their surroundings. The use of architectural features that don't improve function no matter how inexpensive is inappropriate. For example, using a ribbed architectural concrete finish on a warehouse constructed in a remote area is inappropriate even if the special finish is relatively in-expensive (\$45,000 on a \$1.5 million building).

VE Item: Delete ceramic tile in bathrooms.

Discussion: Ceramic tile is a durable, but high cost material that is an excellent choice in public toilets and other wet areas. The additional cost for ceramic tile can not be justified for floors and wainscots (non-shower areas) in residential bathrooms.

VE Idea: Reduce roof eaves

Discussion: Roof eaves provide weather protection for walls, wall openings and building occupants, and are an attractive architectural feature. Eaves that are wider than necessary to provide these functions or that serve only as architectural ornamentation should be reduced to a minimum. For example, eaves on buildings with very high walls do not provide effective weather protection.

**16. VE Idea: Delete vestibule.**

- Discussion:** Vestibules provide a transition zone between the exterior environment and interior spaces and can provide a unsecured area where visitors can be processed at high security facilities. Vestibules are normally not required in tropical areas because of the relative small difference between interior and exterior air temperatures. They should only be considered where they provide a security function.

**17. VE item: Use manually operated doors in lieu of motorized doors**

**Discussion:** Motorized doors are useful when doors are operated frequently. Most sliding, roll-up, and overhead doors are infrequently operated during the workday. A manually operated door should be satisfactory for this kind of usage.

**18. VE Idea: Delete exterior wall insulation**

**Discussion:** Wall insulation should only be used on the exterior wall of air-conditioned spaces. Additionally, exterior wall insulation often can not be justified based on energy cost savings because of the relatively small temperature difference between interior and exterior air temperatures in tropical zones. The decision to install exterior wall insulation should be based on a lifecycle economic analysis.

**19. VE Idea: Delete tapered roof insulation**

**Discussion:** Tapered roof insulation is sometimes used to provide slope on roofs that do not have adequate slopes for positive drainage. This insulation gets very thick when roof spans are large. It is often more economical and less risky to provide an adequate slope on the underlying structural roof deck, use a sloped lightweight topping or construct the roof with less than the recommended minimum roof slope than it is to use roof insulation several feet thick.

**20. VE Idea: Reduce window sizes**

**Discussion:** Windows improve the habitability of interior spaces and are required by building codes to provide light and ventilation to interior spaces. Windows are also

expensive items that can range in cost from \$40 to over \$100 per square foot. Windows also add to air conditioning loads. Window areas should be reduced to the minimum size necessary to provide building habitability. Windows in offices and administrative spaces should be reduced to a minimum.

**21. VE Idea: Reduce roof insulation.**

**Discussion:** Roof insulation is required to reduce heat load to interior spaces and is normally required for air conditioned spaces. Roof insulation requirements for non-air conditioned spaces should be tailored to the specific application. In some instances, insulation can be deleted where high ceilings and good air flow dissipate heat.

**22. VE item: Delete interior painting**

**Discussion:** Painting improves the appearance of finished surfaces, protects substrates from dirt and weathering, and prevents corrosion. Painting of interior spaces is not warranted in all instances. For example, the underside of concrete roof decks and the upper part of masonry walls in warehousing or in industrial buildings often do not have to be painted. Also spaces that are not normally exposed to view such as mechanical and electrical rooms, spaces above ceilings or under raised floors do not need to be painted.

**23. VE Idea: Delete suspended ceilings**

**Discussion:** Ceilings are not required in mechanical and electrical rooms, some laundry and janitor rooms and in other areas that are not normally open for public viewing.

**24. VE Idea: Use batt insulation in lieu of rigid insulation.**

**Discussion:** Batt insulation is normally less expensive than rigid insulation. This material is suitable for installation in stud walls, under roofs, and in ceilings.



**25. VE Idea: Use single pane glazing**

**Discussion:** Double pane thermal glazing is normally not cost effective in tropical areas because of the relatively small temperature difference between interior and exterior air temperatures.

**26. VE Idea: Delete conductive floor topping.**

**Discussion:** Verify that conductive floor surfacing is required. Conductive floor topping is expensive and difficult to install. Conductive floor topping was deleted from several ordnance projects.

**27. VE Idea: Delete under-slab vapor barrier**

**Discussion:** Under-slab vapor barriers are only required where floor covering is to be installed on concrete slabs on grade.

**28. VE Idea: Use paint in lieu of wallcovering**

**Discussion:** Vinyl wall covering is a durable, attractive, but expensive wall finish. Vinyl wall covering should only be used as a special architectural accent where warranted.

**29. VE Idea: Use solid core wood doors in lieu of hollow metal doors.**

**Discussion:** Solid core wood doors are an economical and functional alternate to hollow metal doors for indoor residential or office use.

**30. VE Idea: Maximize re-use of existing construction**

**Discussion:** Rehabilitation and modernization projects often call for removal of all walls, fixtures and utilities that are being replaced because this design philosophy requires the least coordination, site investigation, and risk. Often, however, valuable existing construction, that can be reused, is demolished and replaced. For example, most BEQ renovation projects call for demolition of all interior partitions. Often the new construction will install new CMU walls virtually where the old wall was demolished. Other projects will replace plumbing fixtures or kitchen cabinets that were installed within the past year. Another project included roughly \$250k for demolition of an existing wharf structure. It was later

determined that the structure could be rehabilitated for roughly half of that cost and used for small boats, laydown area and other uses.

31. VE item: Use two finish coats of paint in lieu of three.

Discussion: Some projects specify three coat paint systems for interior painted surfaces. Commercial projects and NAVFAC guide specifications allow 2 coat (1 prime and 1 finish coat) paint systems for some interior surfaces. Since interior paint surfaces are almost never physically worn away before the surface is repainted during normal facility life, two coat systems should be satisfactory.

32. VE Idea: Use wider stud spacing for drywall partitions.

Discussion: Twenty-four inch stud spacing is acceptable for 1/2 inch thick gypsum drywall. This stud spacing should be acceptable for 5/8 inch thick dry wall that is normally specified on military projects.

33. VE Idea: Use 1/2 inch in lieu of 5/8 inch thick gypsum drywall.

Discussion: One-half inch thick gypsum drywall is adequate for most residential uses and for some office and administrative functions where walls will not be subject to physical abuse.

34. VE Idea: Use steel access flooring in lieu of aluminum.

Discussion: Access flooring with steel pedestals are less expensive than flooring with aluminum pedestals. Steel is more than adequate for most installations. Corrosion is normally not a factor because of the environmental control in spaces that use access flooring.

35. VE Idea: Reduce roof pitch.

Discussion: Roofs with steep slopes (3 in 12 or steeper) are less susceptible to leaks and fit in well with some architectural environments. Steep roof pitches with long spans are more expensive because of the increased roofing area and roof framing required. The added framing may not be significant if steel truss framing

with long clear spans are used, because of the increased structural efficiency of the deeper truss. An alternate to reducing the roof pitch is to make use of the large ceiling space resulting from the use steep roof slopes.

**VE Idea:** Use lay-in acoustical tile ceilings.

**Discussion:** Lay-in acoustical tile ceilings are less expensive than other suspended ceiling systems. Two foot by four foot grids are the most economical, but should be used with 3/4 or 1 inch thick tiles to avoid sagging of the ceiling tiles in high humidity areas.

**VE Idea:** Use less expensive flashing, gutters and downspouts.

**Discussion:** Often expensive, corrosion resistant metals are specified for flashing, gutters and downspouts in many of our facilities. We seldom realize the lifecycle cost savings that this high cost construction is intended to provide because these items are usually replaced within 10 years. For example, roof edge flashing for built-up roofing is replaced when a building is re-roofed (normally at 8-10 year intervals) Painted, galvanized sheet metal has a ten year life even in corrosive marine environments. Recently, high performance coatings such as polyvinylidene fluoride based fluoropolymers can even further increase the life of galvanized steel sheet metal.

**VE Idea:** Reduce number of doors

**Discussion:** Doors are high cost items. They should be reduced to the maximum extent possible or lower cost alternate door materials be specified (see items on wood doors and door hardware).

**VE Idea:** Use less expensive door hardware.

**Discussion:** Door hardware, particularly locksets are one of the most expensive items on a door. Often very expensive stainless steel hardware is specified because of the corrosive marine environments in which we construct our facilities. Usually, brass hardware with a brushed chrome finish is more than adequate for general building use. Also, standard (non-ball bearing) plated steel hinges are adequate for indoor residential or office applications

where the door is not a high use door and the hinge is in a controlled environment.

40. VE Idea: Delete veneer plaster

Discussion: Veneer plaster has been used on gypsum drywall partitions in the mistaken belief that the thin veneer would protect the drywall from physical abuse. If protection of drywall is a real requirement then alternate wall material (CMU or CMU combination) or a thicker protective material (plywood, plastic laminate, vinyl wallpaper) should be considered.

41. VE Idea: Reduce interior partition height.

Discussion: Ceiling height partitions should be used in offices or other areas where sound transmission, security, or other considerations do not require partitions to continue to the underside of the floor slab or roof deck above.

## **B. CIVIL**

### **1. VE Idea: Balance cut and fill**

**Discussion:** Designing building elevations and site grading to minimize borrow or disposal requirements will reduce the cost of site work and may significantly reduce foundation costs particularly where pile supported foundations are required. Usually more engineering effort and higher risk are associated with a reduction in finish elevations, however, the payoff can be substantial. For example, the cost of site fill was estimated to be \$50,000 per inch of elevation on one project where all of the site fill was imported.

### **2. VE Idea: Use alternate pipe material for water, sewer, and drainage.**

**Discussion:** PVC piping is less costly than ductile iron in sizes less than 18 to 24 inches in diameter and is usually less costly than all sizes of vitrified clay pipe. This material is non-corrosive and has proven to be as durable as older types of piping on U S. Navy projects where it is correctly specified and installed. The cost advantage of plastic pipe is now becoming more significant because the Navy is starting to install cathodic protection on underground metal pipe. PVC has become the standard material selected by most designers for underground piping. Recently, we paid a contractor \$55,000 for a VECF change to use PVC vice ductile iron pipe. Reinforced or un-reinforced concrete pipe or pvc pipe is suitable for drainage conduits. Corrugated metal pipe and corrugated polyethylene pipe is seldom used but may be considered for special applications.

### **3. VE Idea: Use surcharging or other soil improvement procedure and shallow foundations in lieu of piles.**

**Discussion:** Surcharging to consolidate a site prior to construction can eliminate the need to construct pile supported foundations. Use of surcharging can also avoid the problems associated with site subsidence such as cracked sidewalks, damaged utility connections, etc. Successful execution of a surcharging program requires careful scheduling of the construction work and added risk. The benefits of surcharging or other method of

soil densification are significant and have to be fully explored and carefully explained to the client. Surcharging should always be considered where the site is underlain by loose granular material and deep foundations are being considered.

**VE Idea:** Re-site project.

**Discussion:** Site development problems and the associated high costs are often underestimated during early project planning and preliminary design. These early decisions are often not corrected even after the full impact on project costs are known since re-siting may jeopardize project viability when it is considered late in the design of the project. That is why we have facilities being constructed on flood plains, on sites carved out of mountains, and in swamps. Re-siting of a project should be thoroughly pursued if major site development problems are identified.

**VE Idea:** Reduce roadway width.

**Discussion:** Roadway width may be reduced if one way traffic flows are instituted.

**VE Idea:** Delete provisions for future expansion.

**Discussion:** Many projects incorporate expensive features to provide for future un-programmed building expansion. Some examples of these features are: (1) installation of roof parapet, sloped concrete topping and internal roof drain system (estimated cost \$250k) to allow for a future second story building addition; (2) use of a beam and column structural system with non-load bearing masonry curtain walls to allow horizontal building expansion in all directions (estimated cost \$650k); and (3) construction of 800 square feet of additional building floor area, engine generator pad, and other supporting utilities for installation of a future fourth engine generator (estimated cost \$60k).

**VE Idea:** Reduce demolition by abandoning existing underground construction in-place.

**Discussion:** Existing underground construction that does not interfere with new

construction can be abandoned in-place. Existing pavement can be broken-up and left in place under embankments.

8. VE Idea: Use compact car design criteria for some vehicle parking stalls.

Discussion: The downsizing of domestic automobiles and the large percentage of foreign small cars in the vehicle population allows a percentage of vehicle parking stalls to be designed for compact cars. The reduced stall area can be used to reduce paving requirements or can be used to provide additional parking stalls.

9. VE Idea: Use recycled pavement for basecourse.

Discussion: Existing asphalt or concrete pavement to be removed can be processed so that it can be used for basecourse. Deteriorated asphalt pavement to be replaced or repaved can be heated and remixed with additional asphalt cement and used in lieu of new AC.

10. VE Idea: Use clean outs in lieu of manholes for building sewer.

Discussion: Clean outs can be used in lieu of manholes for building sewers. Manholes should be used for sewer collector systems (two or more buildings feeding into the sewer).

11. VE Idea: Reduce pedestrian walkways

Discussion: Walkway widths should normally be 4 feet wide unless special circumstances dictate otherwise. Walks can be deleted where they parallel paved areas and can be deleted on one side of roads in undeveloped areas. Use a grassed strip along parking areas in lieu of paving in the vehicle overhang area.

12. VE Idea: Delete wheelstops.

Discussion: Delete wheelstops and use the curb to stop cars where vehicles park perpendicular to sidewalk. Separate curbs can be deleted if the sidewalk extends to parking area pavement (see item #11). If wheelstops are installed, use one wheelstop for two stalls. An alternate to this idea is to use wheelstops in lieu of curbs.

13. VE Idea: Use seeding in lieu of sodding.

Discussion: Seeding lawn areas (hydro-mulch) is much less expensive than seeding but

seeded lawns take a long time to grow and require much more maintenance until they are established.

14. VE Idea: Overlay existing pavement in lieu of demolishing pavement and installing new pavement.

Discussion: It is much less expensive to maximize the reuse of existing pavement on site rather than demolishing the pavement and constructing new pavement. Site plans and grading plans should fully consider this possibility.

15. VE Idea: Reduce pavement.

Discussion: Paving should not be installed in small inaccessible corners or other areas that vehicles can not traverse.

16. VE Idea: Use less expensive valves.

Discussion: Gate valves are less expensive than ball valves and butterfly valves are less expensive than gate valves in larger valve sizes. Gate and butterfly valves are not efficient in throttling flows, and butterfly valves can be an obstruction in the fluid stream.

17. VE Idea: Use multiple pipe culverts in lieu of box culverts.

Discussion: Multiple pipe culverts can be used in lieu of a large box culvert or bridge.

18. VE Idea: Reduce chain link fence cost.

Discussion: Use a tension wire in lieu of a top rail. Delete barbed wire and barbed wire extensions because these items make it easier to climb the fence. It is also not necessary to install paving under the fence to provide a non-erodible surface at the fence line.

19. VE Idea: Reduce number of hose bibbs.

Discussion: Install hose bibbs at roughly 100 ft. on center when an irrigation system is not provided. If an irrigation system is provided, install hose bibbs at building corners.



20. VE Idea: Delete welded wire fabric from sidewalks.

Discussion: See discussion of slabs on grade in the structural section.

21. VE Idea: Reduce burial depth of utilities.

Discussion: Use minimum burial depths for utilities. Minimum embedment for utilities is generally 24 inches except for high voltage electrical power cables which require 30 inches of embedment.

22. VE Idea: Encapsulate asbestos in lieu of removal.

Discussion: Encapsulating asbestos to prevent the escape of friable asbestos is a less costly and safer method of ensuring that friable asbestos is not released to the environment.

23. VE Idea: Reduce landscaping.

Discussion: Lush landscaping is a nice amenity that can improve the habitability of a facility or conceal poor or inappropriate architectural features. Extensive landscaping is a high first cost, high maintenance item that is inappropriate on U.S Navy projects. Coconut trees, in particular, are high maintenance items. Reduced landscaping also makes it feasible to eliminate or reduce irrigation systems particularly where native vegetation is selected.

24. VE Idea: Maximize re-use of existing construction.

Discussion: Rehabilitation and modernization projects often call for removal of all walls, fixtures and utilities that are being replaced because this design philosophy requires the least coordination, site investigation, and risk. Often, however, valuable existing construction, is demolished and replaced. For example, most BEQ renovation projects call for demolition of all interior partitions. Often the new construction will install new CMU walls virtually where the old wall was demolished. Other projects will replace plumbing fixtures or kitchen cabinets that were installed within the past year. Another project included roughly \$250k for demolition of an existing wharf structure. It was later determined that the structure

could be rehabilitated for roughly half of that cost and used for small boats, laydown area and other uses.

25. VE Idea: Reduce foundation embedment.

Discussion: Increasing foundation embedment beyond the minimum requirement increases cost dramatically because of increased excavation and backfill, higher foundation walls, and added foundation loads.

26. VE Idea; Delete wharf salt water system.

Discussion: Salt water systems are normally not required on waterfront facilities. Ships normally use ship board pumps to supply salt water for shipboard systems. Fresh water should be used for fire hydrants. Installation of a wharf salt water system requires specific NAVFAC approval.

27. VE Idea: Use surface in lieu of underground drainage.

Discussion: Sheetflow, and drainage swales should be considered for small sites where runoff is small. Splash blocks and sheetflow should always be considered to route roof drainage to catch basins. Caution should be exercised to route water away from pedestrian areas. Underground drainage should be used where this is unavoidable and where normal rainfall will pond water to a significant depth.

28. VE Idea: Investigate the cost of local building materials.

Discussion: Often using local building materials in a project will reduce cost and improve function. Some examples are: 1) cement lath and plaster is less costly than gypsum drywall ceilings in the Philippines, 2) concrete construction is normally less costly than steel where steel is imported and local aggregates are available, 3) pre-cast concrete or tilt-up construction is normally cheaper than CMU where CMU has to be imported, 5) Philippine fabricated marble is less costly in the Philippines than ceramic tile that meets ANSI specifications.

## C. STRUCTURAL

1. VE Idea: Use high strength structural steel.

Discussion: High strength steel costs 10-20% more than A-36 steel but can reduce total steel weight required on a project from 30-40%. These savings will be increased if high shipping or erection costs are associated with the steel construction.

2. VE Idea: Use light gage metal framing in lieu of hot rolled structural steel.

Discussion: Light gage metal framing (particularly roof purlins) is economical because it uses the post buckling strength of the material and typically uses high strength steel. High quality coatings and good detailing are required to reduce deterioration due to corrosion that may affect the structural capacity of light gage framing.

3. VE Idea: Use concrete construction in lieu of steel.

Discussion: Concrete construction is economical in the Philippines (costs approximately one fifth the cost of concrete construction in the U.S ) and other areas in the Pacific. Contractors are generally experienced in cast-in-place pre-cast, pre-stressed and post-tensioned concrete construction. Concrete or masonry construction is economical in most areas where steel has to be imported and clear spans are not excessively long.

4. VE Idea: Reduce clear spans by using interior columns or bearing walls.

Discussion: Interior bearing walls or columns can significantly reduce structural costs especially for buildings with long spans. Users often do not realize the cost impact of their direction to eliminate interior structural supports.

5. VE Idea: Use higher capacity piles.

Discussion: Use of higher capacity piles or utilization of full pile capacities will generally reduce overall costs because the reduction in pile driving cost will more than offset increased superstructure cost.

6. VE Idea: Specify standard pile sections.

Discussion: Use of standard manufactured pile sections will reduce pile costs. Standard

pile sections vary with the specific locality, therefore, pile availability should be checked. Square piles should be considered if standard commercial pre-cast piles are not available because square piles are easy to form.

7. VE Idea: Use surcharging or other soil improvement procedure and shallow foundations in lieu of piles.

Discussion: Surcharging to consolidate a site prior to construction can eliminate the need to construct pile supported foundations. Use of surcharging can also avoid the problems associated with site subsidence such as cracked sidewalks, damaged utility connections, etc. Successful execution of a surcharging program requires careful scheduling of the construction work and added risk. The benefits of surcharging or other method of soil densification are significant and have to be fully explored and carefully explained to the client. Surcharging should always be considered where the site is underlain by loose granular material and deep foundations are being considered.

8. VE Idea: Delete vertical piles where batter piles are installed.

Discussion: Vertical piles can be deleted where batter piles can be installed in an "A" frame configuration.

9. VE Idea: Maximize use of bearing walls.

Discussion: CMU or concrete in-fill walls are sometimes used in a structure and are not intended to carry load. Vertical load carrying elements can normally be reduced if these walls are designed to carry both vertical and horizontal loads. Vertical and horizontal loads will be imposed on these walls anyway unless special detailing such as expansion joints are incorporated in the design. It is therefore reasonable for the wall to be designed to carry these loads.

10. VE Idea: Reduce thickness of walls.

Discussion: Use pilasters, wall corners horizontal beams, etc. to reduce wall thickness. Also consider the direct design approach rather than using empirical

height to thickness ratios to establish wall thickness. CMU wall costs and availability may be a problem for wall thicknesses of more than 8 inches. Four inch thick CMU is not allowed in seismic zone 3 or higher.

11. VE Idea: Use alternate construction for high CMU walls.

Discussion: High CMU walls are expensive and difficult to construct because of the scaffolding and additional wall thickness required. Consider using tilt-up concrete construction, combination walls (CMU lower portion with stud walls above), or other wall system in lieu of CMU.

12. VE Idea: Reduce concrete slab on grade and aggregate fill thickness

Discussion: Use empirical rule of thumb for slab thickness i.e 4 inch slab for 100 psf live load or less; 5 inch slab for 100-200 psf; and 6 inch slab for up to 500 psf live load. Vary slab thickness where slab loading changes over large floor areas. Special aggregate fill under slab normally does not have to be more than 4 inches thick.

13. VE Idea: Delete capillary water barrier and vapor barrier under concrete slabs on grade.

Discussion: Capillary fill is only required where ground water is near the surface of the subgrade. See architectural section for discussion on vapor barriers.

14. VE Idea: Delete welded wire fabric reinforcing in slab on grade.

Discussion: Welded wire fabric (WWF) reinforcing is not effective in preventing slab cracking unless high steel ratios are used. It is much more effective to use proper slab jointing, installation of bar reinforcing at special locations (re-entrant corners), and maybe fiber reinforcement in the concrete mix than it is to use WWF reinforcement.

15. VE Idea: Use alternate to sheetpile quaywalls for wharf structural system.

Discussion: Steel or concrete sheetpiling is an efficient cost effective structural system for marginal wharves when used in conjunction with earth fill and a slab on grade for the wharf deck for water depths less than 35 ft. Other structural systems such as a pile supported structural deck are more economical for deeper dredged depths because required sheetpile

sections are heavier than those rolled in the U.S. This situation requires the use of heavy cover plates, a "king pile" type of design or approval to use foreign manufactured steel piling.

16. VE Idea: Reduce number of foam filled fenders.

Discussion: Foam filled fenders are the current state of the art for ship fender systems. Milcon projects normally provide backing plates for the fenders with the fenders being procured with other funds. Fender backing plates are normally installed at 40-60 foot interval along the berth to accommodate different types of ships. Only 2-3 fenders are required to berth a ship, therefore it is not necessary to provide the fenders at all backing plates. The fenders attachment system should allow the fender to be removed and relocated to other positions.

17. VE Idea: Increase joist spacing.

Discussion: It is more economical to increase steel joist spacing to the maximum extent possible and increase joist capacity. For example, purlin spacing is normally set at 4-5 feet on centers and is usually governed by the structural capacity of the deck. It is very efficient to use cold formed steel purlins spanning roughly 20 feet between steel joists for normal roof loads rather than installing the roof joists at 4 feet on center.

18. VE Idea: Use CMU foundation walls.

Discussion: CMU foundation walls are less expensive than cast in place concrete walls of similar thickness and have been successfully used on many projects. CMU stem walls have less reserve strength to bridge discontinuities in the sub-grade, and increase the risk of wall cracking.

19. VE Idea: Reduce concrete slab tolerances.

Discussion: Specify normal slab tolerance of 1/4 inch in 10 feet unless special

tolerances are required i.e. super flat floors. Higher than normal floor flatness criteria is expensive and is difficult to achieve.

20. VE Idea: Use hairpins in lieu of tie beams for rigid frame buildings.

Discussion: Use hairpins in the building floor slab or install tierods in the floor slab to avoid constructing separate tie beams.

21. VE Idea: USE CMU in lieu of cast in place concrete.

Discussion: CMU is a economical masonry material in most areas and can be made to appear virtually identical to concrete (with plaster finishes). Waterproofing of exterior masonry surfaces must be considered in design. Use full strength masonry design for Government inspected construction.

22. VE Idea: Use open web steel joists or joist girders in lieu of rolled sections.

Discussion: Open web joists or joist girders are efficient structural members where their greater depth can be accommodated.

23. VE Idea: Reduce foundation embedment.

Discussion: Increasing foundation embedment beyond the minimum requirement increases cost dramatically because of increased excavation and backfill, higher foundation walls, and added foundation loads.

24. VE Idea: Use pre-engineered metal buildings.

Discussion: Pre-engineered metal buildings are highly engineered to make them efficient and economical. They also benefit from the economy of assembly line manufacturing techniques. Pre-engineered buildings can be enclosed by masonry walls and can incorporate many architectural features that make them virtually indistinguishable from custom designed buildings.

25. VE Idea: Delete provisions for future expansion.

Discussion: Many projects incorporate expensive features to provide for future un-programmed building expansion. Some examples of these features are: (1) installation of

roof parapet, sloped concrete topping and internal roof drain system (estimated cost 250k) to allow for a future second story building addition; (2) use of a beam and column structural system with non-load bearing masonry curtain walls to allow horizontal building expansion in all directions (estimated cost \$650k); and (3) construction of 800 square feet of additional building floor area, engine generator pad, and other supporting utilities for installation of a future fourth engine generator (estimated cost \$60k).

26. VE Idea: Investigate the cost of local building materials.

Discussion: Often using local building materials in a project will reduce cost and improve function. Some examples are: 1) cement lath and plaster is less costly than gypsum drywall ceilings in the Philippines, 2) concrete construction is normally less costly than steel where steel is imported and local aggregates are available, 3) pre-cast concrete or tilt-up construction is normally cheaper than CMU where CMU has to be imported, 5) Philippine fabricated marble is less costly in the Philippines than ceramic tile that meets ANSI specifications.

27. VE Idea: Delete conductive floor topping.

Discussion: Verify that conductive floor surfacing is required. Conductive floor topping is expensive and difficult to install. Conductive floor topping was deleted from several ordnance projects.

28. VE Idea: Delete under-slab vapor barrier.

Discussion: Under-slab vapor barriers are only required where floor covering is to be installed on concrete slabs on grade.

29. VE Idea: Maximize re-use of existing construction.

Discussion: Rehabilitation and modernization projects often call for removal of all walls, fixtures and utilities that are being replaced because this design philosophy requires the least coordination, site investigation, and risk. Often, however, valuable



existing construction, that can be reused, is demolished and replaced. For example, most BEQ renovation projects call for demolition of all interior partitions. Often the new construction will install new CMU walls virtually where the old wall was demolished. Other projects will replace plumbing fixtures or kitchen cabinets that were installed within the past year. Another project included roughly \$250k for demolition of an existing wharf structure. It was later determined that the structure could be rehabilitated for roughly half of that cost and used for small boats, laydown area and other uses.

30. VE Idea: Use thickened slabs in lieu of separate foundations for walls.

Discussion: Thickened slabs can be used in lieu of separate footings and foundation walls for non-bearing partitions and lightly loaded bearing walls.

## D. MECHANICAL

1. VE Idea: Use lightweight fire protection sprinkler pipe or copper Type K, L, or M.

Discussion: Lightweight fire protection sprinkler pipe has been approved for use on Navy projects. Current PACNAVFACENGCOM fire protection policy is to allow use of any material allowed by the NFPA that is UL listed or Factory Mutual Approved. Lightweight pipe has been used on cross mains and schedule 40 pipes on branch lines. There have been at least two facilities where lightweight pipe started to leak within 5 years of initial installation. It is not known yet whether corrosion of the pipe caused the leaking. Lightweight pipe with screwed fitting were used on some projects. We do not yet know if cutting threads in the thin pipe wall caused the problem. Designers should not specify lightweight pipe until the cause of the failure has been determined. Copper pipe can be used on both cross mains and branch lines. Copper or lightweight pipe should not be used for exposed lines in barracks or in other locations where the pipe can be exposed to physical damage.

2. VE Idea: Reduce amount of make up air for air conditioning systems to the minimum requirement.

Discussion: Designing AC systems for minimum make up air will significantly reduce AC loads and thereby reduce construction and energy costs. Designing for minimum make-up air is reasonable in tropical environments because buildings are not sealed as tight as in colder climates.

3. VE Idea: Use return air plenum in lieu of return air ducts.

Discussion: Use of a ceiling return air plenum in lieu of return air ducts should be considered for buildings where the return air plenum can be well sealed. Use of a return air plenum can reduce duct interference problems in barracks and other

buildings that have limited floor to floor clearance. A one hour fire rated ceiling and fire dampers on penetrations through fire walls are required.

4. VE Idea: Use DX air conditioning units in lieu of a chilled water system.

Discussion: Packaged DX air conditioning units are an economical method of providing cooling for small AC systems that use a single air handler. Multiple DX units can also replace larger chilled water AC systems. The decision to use DX air conditioning should be based on a life-cycle cost analysis.

5. VE Idea: Use fiberglass in lieu sheetmetal ducts.

Discussion: Fiberglass ducts are less expensive when compared to insulated sheetmetal ducts. Fiberglass is less durable than sheetmetal, and requires good workmanship to insure that they don't leak. They are suitable for low pressure, low velocity ductwork where they will be protected from physical damage. Fiberglass duct has roughly a 10% cost advantage over sheetmetal.

6. VE Idea: Delete provisions for future expansion.

Discussion: Many projects incorporate expensive features to provide for future un-programmed building expansion. Some examples of these features are: (1) installation of roof parapet, sloped concrete topping and internal roof drain system (estimated cost \$250k) to allow for a future second story building addition; (2) use of a beam and column structural system with a non-load bearing masonry curtain walls to allow horizontal building expansion in all directions (estimated cost \$650k); and (3) construction of 800 square feet of additional building floor area, engine generator pad, and other supporting utilities for installation of a future fourth engine generator (estimated cost \$60k).

7. VE Idea: Use alternate piping materials.

Discussion: Plastic piping material is approved for drain, waste, and vent piping on U.S. military projects that are two stories or less in height. No-hub cast iron piping is permitted

in all locations. Pvc piping is permitted for water supply piping. Plastic piping is susceptible to physical damage and plastic DWV piping is noisy in multi-story construction. These factors should be considered when piping material is selected.

8. VE Idea: Use tank type in lieu of flush valve toilets.

Discussion: Tank type toilets are less expensive and use less water than flush valve toilets. Recent maintenance experience indicate that tank type toilets do not require more maintenance than flush valve toilets and may actually require less maintenance where there is a lot of sediment in the water supply.

9. VE Idea: Delete solar hot water heating system.

Discussion: Solar hot water heating systems normally do not have a lifecycle cost advantage over other forms of domestic hot water heating. Usually, heat reclaim from air conditioning systems with a back-up heating source is the most economical. Where air conditioning is not provided, oil or LPG fired boilers are normally the most efficient for large hot water users. Heat pumps and sometimes electric hot water heating is more economical for small users of hot water.

10. VE Idea: Eliminate hot water from lavatories.

Discussion: Hot water is not needed for normal hand washing in tropical climates because water temperatures are comfortable. Often the deletion of hot water at lavatories in administration facilities will allow deletion of the entire hot water system.

11. VE Idea: Reduce number of volume dampers in VAV systems.

Discussion: Designers often install additional volume dampers to aid in balancing of air conditioning systems. In some instances this is carried to the extent that each VAV box is preceded by a damper. Volume dampers should only be installed at major duct branches. Proper design of duct system using static regain methodology should eliminate the need to install an excessive number of volume dampers.

12. VE Idea: Increase capacity of mechanical equipment and reduce number of units.

Discussion: It is normally less expensive to increase the capacity of individual units and to reduce the total number of units installed. The cost of mechanical equipment increases less as the capacity of the unit increases. The usual cost increase is equal to the capacity increase raised to the 2/3 power. In other words, doubling the capacity of a fan will increase its cost by 160% ( $2^{0.67} = 1.60$ ). Increasing capacity and reducing the number of units will reduce flexibility and redundancy.

13. VE Idea: Reduce fire protection features.

Discussion: Navy fire protection policy adheres to existing published codes and criteria. Fire protection design should follow this design policy and install sprinklers, detectors, alarms, etc. only where required by established codes or criteria.

14. VE Idea: Reduce engine generator fuel tank capacity.

Discussion: Mil Handbook 1003/11 specifies that sufficient fuel tank capacity be provided to operate prime duty plants for 30 days and stand-by engine generator plants for 7 days. Fuel tank requirements should be adapted to local conditions. Where ample liquid fuel bulk storage is available, fuel tank capacities can be reduced. The converse is also true for remote sites.

15. VE Idea: Maximize use of natural ventilation.

Discussion: Construction and energy consumption costs can be reduced if buildings are designed to take advantage of natural ventilation in areas like Hawaii where reliable tradewinds can provide comfortable air circulation for 90% of the year. Also, mechanical ventilation is very inefficient when it is compared to the large amounts of air that even a soft 5 mph breeze can move through a building. Caution should be exercised when natural ventilation is used in dirty environments because natural ventilation schemes will allow dust and dirt to enter buildings.

**16. VE Idea: Use fire protection sprinklers in lieu of halon.**

**Discussion:** Halon fire protection is only permitted where CO<sub>2</sub> or sprinklers can not be used and the facility is essential to national defense. Pre-action sprinklers are the most cost effective choice for electronic or computer facilities where accidental discharge of wet type sprinklers can not be tolerated.

**17. VE Idea: Delete exterior wall insulation.**

**Discussion:** Wall insulation should only be used on the exterior wall of air conditioned spaces. Additionally, exterior wall insulation often can not be justified based on energy cost savings because of the relatively small temperature difference between interior and exterior air temperatures in tropical zones. The decision to install exterior wall insulation should be based on a lifecycle economic analysis.

**18. VE Idea: Reduce roof insulation.**

**Discussion:** Roof insulation is required to reduce heat load to interior spaces and is normally required for air conditioned spaces. Roof insulation requirements for non-air conditioned spaces should be tailored to the specific application. In some instances, insulation can be deleted where high ceilings and good air flow dissipate heat. Roof insulation requirements should be based on a life-cycle cost analysis.

**19. VE Idea: Maximize re-use of existing construction.**

**Discussion:** Rehabilitation and modernization projects often call for removal of all walls, fixtures and utilities that are being replaced because this design philosophy requires the least coordination, site investigation, and risk. Often, however, valuable existing construction, that can be reused, is demolished and replaced. For example, most BEQ renovation projects call for demolition of all interior partitions. Often the new construction will install new CMU walls virtually where the old wall was demolished. Other projects will replace plumbing fixtures or kitchen cabinets that were installed within the past year. Another project included roughly \$250k for

demolition of an existing wharf structure. It was later determined that the structure could be rehabilitated for roughly half of that cost and used for small boats, laydown area and other uses.

20. VE Idea: Reduce insulation on AC ducts passing through cooled spaces.

Discussion: PACNAVFACENGCOM air conditioning policy specifies that AC ducts be insulated with 2 inches of insulation. Insulation thickness can be reduced to one inch for ducts passing through conditioned spaces.

21. VE Idea: Use floor mounted toilets.

Discussion: Floor mounted toilets are less expensive wall mounted units. Wall mounted toilets should only be used for special installations such as facilities for handicapped personnel.

22. VE Idea: Delete or reduce chilled water and hot water recirculation systems.

Discussion: Point of use hot water heaters or separate DX air conditioning units should be used to provide hot water or air conditioning to remote areas in buildings.

23. VE Idea: Use wet pipe fire protection sprinklers in lieu of pre-action sprinklers.

Discussion: Pre-action fire protection sprinklers are more complicated and costly than wet pipe sprinklers. They should only be used where the additional safety that they provide against accidental sprinkler discharge is economically justified.

24. VE Idea: Reduce the number of air conditioning zones.

Discussion: Often the number of AC zones and resulting VAV boxes is more than the minimum number required provide a reasonable level of comfort. Combining zones (for example small private offices on one side of a building) will reduce the number of VAV boxes and construction costs. Reducing zones will, however, reduce flexibility of the system.

25. VE Idea: Use less complicated AC system.

Discussion: Small AC systems do not have to be very sophisticated to provide adequate environmental control. Some suggestions are: 1) delete inlet vane controls and let fan vary

air flow by following the fan curve or use variable frequency drives, 2) Use electric controls in lieu of pneumatic controls, 3) use standard VAV boxes in lieu of fan terminal units, 4) delete variable speed drive for fan motors, and 5) use constant volume AC.

26. VE Idea: Use above ground fuel tanks.

Discussion: Above ground fuel tanks do not require double containment and leak detection. Leak detection is easier and more positive with above ground tanks, and they are easier to repair or replace if a problem is detected.



## **ELECTRICAL**

1. **VE Idea:** Use building mounted exterior light fixtures in lieu of pole mounted fixtures.

**Discussion:** Pole and pole installation costs are the largest cost component of exterior lights.

Using the building or other structural element to provide the required fixture mounting height will reduce initial construction costs.

2. **VE Idea:** Reduce number of light fixtures by increasing wattage of individual fixture.

**Discussion:** Reducing the number of light fixtures while maintaining the same illumination level by increasing the light output of each fixture will reduce initial construction costs.

Lighting uniformity may suffer if fixture height is not increased to compensate for the increased fixture light output. This VE Idea is particularly applicable to outdoor lighting because light standards are very expensive. The savings that result from the reduction in fixture quantities will be substantial if the number of light standards can also be reduced. Exterior lighting layouts that decrease the number of light standards by increasing the number of fixtures mounted on a light standard will also reduce cost.

3. **VE Idea:** Use thin wall (Type EB) pvc conduit in lieu of PVC schedule 40 conduit in concrete encased ductline.

**Discussion:** Type EB pvc conduit is manufactured for concrete encased underground ducts.

This material is less expensive than schedule 40 pvc conduit but requires extra care during installation to insure that it performs satisfactorily. Type EB conduit should be specified as a contractor option to schedule 40 pvc conduit. The specification should provide direction on proper installation and handling of type EB conduit.

4. **VE Idea:** Use alternate conduit material.

**Discussion:** Lower cost conduit materials other than rigid metal conduit (RMC) are:

- a. Intermediate metal conduit (IMC). Lower cost than RMC. Can be used in all applications where RMC is used. May not be a stocked item.

- b. Electrical metallic conduit (EMT). Lowest cost metallic conduit. Do not use in feeder

circuits, outdoors, underground, encased in concrete, wet environments, in areas where it may be subject to severe physical damage or hazardous locations. PVC conduit (Rigid nonmetallic conduit). Suitable for installation underground or embedded in concrete. Can be used as direct buried conduit for low voltage outdoor circuits. Do not use in feeder circuits, in areas subject to severe physical damage, in hazardous areas, and do not penetrate required fire rated partitions.

5. VE Idea: Use handholes in lieu of manhole.

Discussion: Handholes are significantly less expensive than electric manholes. Handholes should be used for duct runs that only contain a small number of circuits and where there is no increase planned for the near future. i.e. OK for 600V circuits or less and for up to one primary circuit. Manholes should be used in traffic areas because traffic bearing handhold covers are not normally available.

6. VE Idea: Use pad mounted transformer in lieu of unit substation.

Discussion: Exterior pad mounted transformers are normally specified for transformer sizes of 500 KVA or less. Unit substations are used for larger loads. Pad mounted transformers are less costly than unit substations for most installations even when separate pad mounted primary switchgear is used.

7. VE Idea: Reduce transformer size.

Discussion: Transformer capacities should be reduced to the minimum allowed by codes and criteria. Transformer sizing should consider liberal assumptions for demand, diversity, and spare capacity because transformers can operate at higher than rated capacities for considerable length of time without damage (fan cooling of substation transformers can also increase their rated capacity considerably). Designing transformers to operate closer to rated capacity will reduce first cost and will improve operating efficiency of the transformer by reducing core losses.

8. **VE Idea: Use one fire alarm radio transmitter per facility complex vice one transmitter per building**

**Discussion: Several fire alarm control panels can be connected into one radio fire alarm transmitter. Only one transmitter is required per building complex.**

9. **VE Idea: Delete intercom system.**

**Discussion: Intercom functions can be provided in most telephone instruments at a minimal cost. Analog telephones with a memory feature cost roughly \$30-40.**

10. **VE Idea: Reduce number of electrical panels.**

**Discussion: Many designers use only a fraction of the breaker capacity of an electrical panel and therefore end-up with numerous panels. Providing spare capacity in panels to allow for the addition of future circuits is a good idea as long as it is not carried to an extreme. A reasonable quantity of spares is 25% of the panel capacity. Reducing the number of panels can have a greater cost impact than the cost of the panel since the additional panels may require the installation of a secondary main breaker.**

11. **VE Idea: Use overhead electrical distribution.**

**Discussion: Overhead electrical distribution is much less expensive than underground distribution and is easier to maintain. Overhead distribution is often unsightly and is susceptible to damage from storms. It should be used where the distribution system in the area is run overhead and there are no near term plans to install the distribution underground.**

12. **VE Idea: Use alternate material in lieu of metal poles.**

**Discussion: Regular commercially manufactured concrete poles are available in some areas that are an economical, attractive, corrosion resistant alternate to metal power and light poles. Wood poles may be acceptable where first cost is of primary importance and there are existing wood poles used at that location.**

13. VE Idea: Use more economical lighting.

Discussion: Fluorescent lighting is the most economical lighting source in terms of lifecycle costs. High intensity discharge (HPS, LPS, etc.) have higher first cost but are more energy efficient when compared to metal halide, quartz or incandescent lighting. The latter light sources are sometimes specified where a white light source is required. Incandescent lighting has the lowest first cost and can be used where energy consumption is not important or where aesthetic features over-ride the energy considerations. High cost items like special parabolic lenses for light fixtures are normally not required.

14. VE Idea: Reduce lighting levels.

Discussion: Satisfactory lighting depends on many subjective factors such as age of the worker, contrast with lighting in other work areas, type of work that is being done, color spectrum of the light, lighting ratios, etc. Lighting calculations also include several assumptions such as the reflectivity of the room surfaces, and the degradation of light output during the life of the fixture that may or may not reflect actual room conditions. Lighting design based on less conservative assumptions that provide lighting levels listed in Mil Handbook 1190 will reduce initial construction costs and energy consumption. Note that lighting levels higher than 75 footcandles should be provided by supplemental lighting.

15. VE Idea: Reduce number of light switches.

Discussion: Unnecessary light switches are sometimes installed in residential units. For example: 1) separate switches are sometimes used for toilet exhaust fans where they could be better controlled with the toilet light switch, and 2) three-way switches in a bathroom were located only 4 feet apart.

16. VE Idea: Eliminate explosion proof requirement for electrical equipment.

Discussion: Explosion proof electrical equipment (class 1, division 1) is very

expensive. Effort should be made to eliminate this requirement. For example, electrical equipment should be located more than 24 inches above the floor in automobile repair shops or aircraft hangers; electrical panels should be located outside of explosive operating areas and magazines, etc.

17. VE Idea: Use four lamp florescent light fixtures in lieu of three lamp fixtures.

Discussion: Four lamp fixtures are slightly more expensive than three lamp fixtures but have significantly greater light output. The greater light output per fixture can reduce the number of fixtures installed.

18. VE Idea: Delete emergency engine generator.

Discussion; The requirement for the installation of new emergency engine generators should be verified. In some instances engine generator installation was found to be in excess of actual project requirements or that existing emergency generation could provide the necessary emergency power.

19. VE Idea: Reduce number of transformers.

Discussion: An appropriate distribution voltage should be used to minimize voltage drop and the number and size of transformers. On small facilities that do not have a high percentage of equipment loads consider 120/208 distribution voltage.

20. VE Idea: Use lower cost emergency lighting system.

Discussion: Generally, the most cost effective emergency lighting fixtures are normal interior light fixtures that are provided with battery packs and battery chargers. If these units are not acceptable then separate battery operated emergency light units should be considered. Emergency lights powered by a central battery unit are costly and are less desirable but may be required in some instances. Also, emergency lights are often not required by codes or criteria. In these instances, it is acceptable to power emergency light circuits with emergency generators if generators are available in the facility. The need for emergency lights in the building is not a justification to install an engine generator.

21. **VE Idea: Use fused switches in lieu of circuit breakers.**

**Discussion:** Fused switches are low cost alternate to vacuum circuit breakers in primary electrical systems. They are not adaptable to remote monitoring and control and are not suitable where breaker coordination is required.

22. **VE Idea: Use radial feed in lieu of loop feed distribution.**

**Discussion:** Radial feed systems are less costly, but do not provide the redundancy inherent in loop feed distribution systems. Radial feed distribution should be used only for non-critical facilities where power outages can be accommodated.

23. **VE Idea: Use molded case circuit breakers in lieu of draw-out breakers.**

**Discussion:** Molded case breakers are less expensive than draw-out breakers, but aren't as durable and as easily replaced. Also, trip settings and time delays aren't as easy to adjust or as reliable as draw-out breakers. Newer molded case breakers with electronic controls and improved performance should be considered as a lower cost alternate to draw-out breakers.

24. **VE Idea: Delete reinforcement in concrete encased duct bank.**

**Discussion:** Concrete reinforcing bars are normally not required in concrete encased duct banks.

25. **VE Idea: Delete lightning protection.**

**Discussion:** Lightning ground strikes are a rare occurrence in humid tropical areas. Lightning protection can be deleted with little increase in risk.

26. **VE Idea: Delete conduits for telephone cable.**

**Discussion:** Telephone cables for offices and administrative facilities in the private sector are normally laid directly on ceilings without conduits for facilities with open floor plans or other facilities where exact telephone locations can not be determined prior to telephone installation. Use plenum rated cable for cables laid in ceiling plenums.

**27. VE Idea: Use existing ducts where available.**

**Discussion:** There is a tendency for designers to call for the installation of new ducts where underground cabling is required because of the difficulty in insuring that there are adequate open ducts available for new cable installation. The reduction in construction cost and risk is worth the added field investigation and design risk involved if new underground duct construction can be avoided.

**28. VE Idea: Reduce area lighting handholes.**

**Discussion:** Wiring for exterior lighting can be spliced in the light standard base in lieu of installing a separate handhold at each pole.

**29. VE Idea: Place isolation transformer in taxiway light fixture base.**

**Discussion:** The standard FAA taxiway light installation places the isolation transformer and fixture in the same can. This installation will reduce the need to install a handhold at each light fixture.

**30. VE Idea: Use single-ended substation.**

**Discussion:** Double-ended substations should be only provided where an extraordinary level of power reliability is required. Justification for a double-ended substation should be documented.

**31. VE Idea: Reduce size of neutral conductor.**

**Discussion:** Building codes do not specify minimum sizes of neutral conductors. The use of half size conductor is reasonable since unbalanced loads should be small.

**32. VE Idea: Delete master television antenna.**

**Discussion:** Verify that a master television antenna is required. Most barracks and other residential facilities subscribe to cable television service.

**33. VE Idea: Use government furnished engine generator for 400 HZ and 24 volt D.C. power**

**Discussion:** Government furnished individual 400 HZ and 24 volt engine generators can

be used for low load demand requirements. These units are standard stock items at aviation maintenance activities.

34. VE Idea: Delete provisions for future expansion.

Discussion: Many projects incorporate expensive features to provide for future unprogrammed building expansion. Some examples of these features are: (1) installation of roof parapet, sloped concrete topping and internal roof drain system (estimated cost \$250k) to allow for a future second story building addition; (2) use of a beam and column structural system with non-load bearing masonry curtain walls to allow horizontal building expansion in all directions (estimated cost \$650k); and (3) construction of 800 square feet of additional building floor area, engine generator pad and other supporting utilities for installation of a future fourth engine generator (estimated cost \$60k).

35. VE Idea: Use skylights to reduce artificial lighting requirements.

Discussion: Incorporating skylights in building design will increase initial construction costs but will allow artificial lighting to be reduced on sunny days. This feature can generate significant energy savings over the life of the project. Skylights may not provide acceptable light quality and light levels depending on the amount and orientation of sunlight available. Also, skylights are a potential source of roof leaks, so good, watertight, architectural detailing is required. Zoned or multiple switching of lights should be incorporated in the lighting system to allow staged reduction in artificial lighting levels.

36. VE Idea: Investigate the cost of local building materials.

Discussion: Often using local building materials in a project will reduce cost and improve function. Some examples are: 1) cement lath and plaster is less costly than gypsum drywall ceilings in the Philippines, 2) concrete construction is normally less costly than steel where steel is imported and local aggregates are



available, 3) pre-cast concrete or tilt-up construction is normally cheaper than CMU where CMU has to be imported, 5) Philippine fabricated marble is less costly in the Philippines than ceramic tile that meets ANSI specifications.

37. VE Idea: Maximize re-use of existing construction.

Discussion: Rehabilitation and modernization projects often call for removal of all walls, fixtures and utilities that are being replaced because this design philosophy requires the least coordination, site investigation, and risk. Often, however, valuable existing construction, that can be reused, is demolished and replaced. For example, most BEQ renovation projects call for demolition of all interior partitions. Often the new construction will install new CMU walls virtually where the old wall was demolished. Other projects will replace plumbing fixtures or kitchen cabinets that were installed within the past year. Another project included roughly \$250k for demolition of an existing wharf structure. It was later determined that the structure could be rehabilitated for roughly half of that cost and used for small boats, laydown area and other uses.

38. VE Idea: Reduce demolition by abandoning existing underground construction in-place

Discussion: Existing underground construction that does not interfere with new construction can be abandoned in-place. Existing pavement can be broken-up and left in place under embankments.

39. VE Idea: Delete provisions for future expansion.

Discussion: Many projects incorporate expensive features to provide for future un-programmed building expansion. Some examples of these features are: (1) installation of roof parapet, sloped concrete topping and internal roof drain system (estimated cost \$250k) to allow for a future second story building addition; (2) use of a beam and column structural system with a non-load bearing masonry curtain walls to allow horizontal building expansion in all directions (estimated cost \$650k); and (3) construction



















of 800 square feet of additional building floor area, engine generator pad, and other supporting utilities for installation of a future fourth engine generator (estimated cost \$60k).

APPENDIX L: SAMPLE BORING LOG

1. Sample Boxing Log

### BORING LOG

BORING NO. \_\_\_\_\_ DRIVING WT. \_\_\_\_\_ DATE OF DRILLING \_\_\_\_\_  
 SURFACE ELEV. \_\_\_\_\_ DROP \_\_\_\_\_ ∇ WATER LEVEL \_\_\_\_\_

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS / FT.	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	DESCRIPTION
		GW				WELL-GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GP				POORLY-GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GM				SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
		GC				CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
		SW				WELL-GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES
		SP				POORLY-GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES
		SM				SILTY SANDS, SAND-SILT MIXTURES
		SC				CLAYEY SANDS, SAND-SILT MIXTURES
		ML				INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
		CL				INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		OL				ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY
		MH				INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
		CH				INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
		OH				ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
		Pt				PEAT AND OTHER HIGHLY ORGANIC SOILS
						BASALT (TRAP)
						CORAL
						MUDROCK



## APPENDIX M: COLLATERAL EQUIPMENT INFORMATION

1. PACNAVFACENGCOMINST 11010.12A of 1 Mar 1989



DEPARTMENT OF THE NAVY  
PACIFIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
(MAKALAPA, HI)  
PEARL HARBOR, HAWAII 96860-7300

PACNAVFACENGCOMINST 11010.12A  
09A2A

1 MAR 1989

PACNAVFACENGCOM INSTRUCTION 11010.12A

From: Commander, Pacific Division, Naval Facilities Engineering Command

Subj: COLLATERAL EQUIPMENT (CEQ) INITIAL OUTFITTING PROGRAM FOR GO- OF JAPAN (GOJ) CONSTRUCTED FACILITIES

Ref: (a) NAVFAC Design Manual 14.01 (Apr 86)  
(b) NAVCOMPT Manual Vol VII

Encl: (1) Budget List Sample  
(2) Facilities Improvement Program Classified Responsibility of GOJ/USG (A) for Funding/Installation of Equipment, Etc.  
(3) Buy Package Sample

1. Purpose. To provide guidance and procedure<sup>6</sup> for the budgeting, purchasing, and installation of collateral equipment under the initial outfitting program for GOJ constructed facilities including relocation projects and the FIP.

2. Cancellation. PACNAVFACENGCOMINST 11010.12

3. Definition

a. Collateral Equipment for initial outfitting - the first provisioning of equipment and furnishings based on requirement<sup>6</sup> generated by new construction, expansion or conversion of a facility. This equipment is not installed or built-in but is loose, portable or mobile. The equipment include<sup>6</sup> both expense (O&MN) and investment (OPN) items.

b. Activity or Benefitting Activity - the entity that will hold plant account or occupy the completed facility. This activity is responsible obtaining collateral equipment for initial outfitting.

4. Background.

a. Budgeting for collateral equipment On GOJ constructed facilities is initiated by the benefitting activity who prepare<sup>6</sup> a budget list for each facility and forwards the budget to PACNAVFACENGGOM. Each list is validated by PACNAVFACENGCOM and forwarded to COMNAVFACENGCOM who program<sup>6</sup> for and issue the funds.

b. While fund<sup>6</sup> are being obtained through the programming cycle and the facility project is being developed between the U.S. and GOJ, a buy list is prepared by the activity which describes each item shown on the budget list in sufficient detail for procurement. Some activities use Architect Engineering firms or station forces to prepare an integrated design for the facility showing color schemes, signage, revised interior building layout, furniture selection, etc.

1 MAR 1989

c. Upon PACNAVFACENGCOM receipt of fund allocation from NAVFACENGCOM and a buy list from the activity (which has been validated by PACNAVFACENGCOM) funds are disbursed to the Construction Battalion Center (CBC) Port Hueneme for collateral equipment procurement action. Funds may also be issued to the activity, Resident Officer in Charge of Construction, Pacific (ROICCPAC) and others as appropriate for the procurement, delivery, storage, and installation of collateral equipment.

d. When tasked by PACNAVFACENGCOM, CBC Port Hueneme coordinates with the activity to purchase, receive/consolidate equipment for each project, store as necessary, and ship to the new facility in time to meet the required equipment on-site date which normally coincide with the beneficial occupancy date (BOD).

5. Objectives. The objectives of the initial outfitting program are to:

a. Identify all of the GOJ constructed facilities and the associated collateral equipment requirements necessary for a complete and usable facility.

b. Meet budget deadlines so required funds can be programmed during the normal budget cycle and equipment can be delivered and installed at time of BOD.

c. Provide sufficient expense and investment funds that are under the cognizance of NAVFACENGCOM, to the purchasing authority allowing adequate lead time to meet purchasing deadline.

d. Disseminate information concerning budget, procurement, schedules, and changes to the initial outfitting program.

6. Responsibilities and Actions

a. Benefitting Activity will:

(1) Identify projects requiring collateral equipment. Forward to PACNAVFACENGCOM (Code 09A2A2) the project budget list which specifies the equipment name, quantity, unit price, and total funding needs using enclosure (1) format by 31 March, two fiscal years prior to the funding fiscal year. For example, submit budget list no later than 31 March 1989 for collateral equipment to be funded for procurement in FY91. Projects with BOD within FY89 and up to May 1990 will be considered for FY89 funding. Activities having projects with equipment that have longer delivery times should request for an earlier fiscal year funding. Update this list annually on 31 March. (R)

(a) The following items may be included in the budget:

1. Purchase price and reasonable escalation cost (use the current NAVCOMPT Note rates) of the item.

2. 4% packing, crating and handling costs.

3. Refurbishment cost when considered economical.



4. A maximum of 5% contingency.

(b) The following items may not be included in the budget:

1. All items identified in enclosure (2) as GOJ furnished/GOJ (A installed, and some types of U.S. Government (USC) furnished equipment (e.g., automated storage racks, wallpaper, vending machines, radio systems, etc.).

2. Expenses to transport and install existing reusable collateral equipment or equipment procured by another sponsor may not be included in this cost. Activity resources are normally used to install the new equipment. Contracting is used for installations requiring special skills.

3. First destination transportation costs are chargeable to appropriate expense and investment TAC number and, therefore, should not be included in the budget.

(2) Obtain design services, per reference (a), when appropriate, to integrate personnel needs, color and finish selections, signage, graphics, furniture and equipment selection, etc., during the GOJ facility design. These services are available at OICC Far East on a reimbursable basis.

(3) Initiate action to obtain funds for collateral equipment from the other cognizant sponsors per reference (b) when applicable (e.g., communication equipment, aviation support equipment, ships support equipment, industrial plant equipment, and some medical and dental equipment as identified by Naval Medical Command/COMNAVFACENGCOM).

(4) Submit a buy package as shown on enclosure (3) twelve to fourteen (R months prior to the required on-site delivery date. The submittal requirements provided in reference (a), Section 5, are amended by deleting the Procurement Sheet and placing all narrative information onto the Bill of Material form with a corresponding full size catalog cut. In developing the buy list, select from the following priority sequence of sources: Federal Prison Industries (FPI), Workshop for the Blind or Severely Handicapped, General Services Administration (GSA) Schedules. Although overseas activities are exempt from procuring from these mandatory sources, the procurement agent, CBC Port Hueneme must comply with these regulations. If current Federal contracts are not used and material must be procured by CBC on the open market, procurement packages over \$100,000 will be forwarded (R to the Navy Regional Contracting Office (NRCO), Long Beach and delivery lead time will very likely exceed 9 months. NRCO Long Beach requires detailed specifications in order to execute competitive procurement action.

(5) Procure, arrange for delivery, store and install the equipment in the completed facility. Coordinate with CBC Port Hueneme or ROICCPAC in identifying substitution and arranging for delivery. Address quantity increases, item changer-and cost increases to PACNAVFACENGCOM (Code 09A2A2).

1 MAR 1989

(6) Provide updated project BOD date6 to PACNAVFACENGCOM (Code 09A2A2) prior to procurement. During the procurement phase, advise CBC Port Hueneme, info PACNAVFACENGCOM (Code 09A2A2) of updated BODs. Any detention, storage or additional handling charges will be paid by the activity.

(7) Obtain required approvals from proper authority as required by current instructions. Examples include: filing cabinets, audio-visual equipment, and industrial plant equipment.

(8) Inspect and receive material. Any damaged equipment will be handled as follows:

(a) If the box or crating of the equipment is received in damaged condition, submit a Report of Discrepancy (ROD) to the local Naval Supply Center for resolution.

(b) If the shipping box is in good condition and the equipment is damaged or defective, the activity must take action to repair or replace the item. CBC Port Hueneme or the procuring agency is not funded to provide replacement items due to damage. However, if it appears the item is defective (e.g., missing parts, does not align properly when assembled, etc.) then coordinate resolution with the vendor through the procuring agency. Provide documentation describing the problem and include pictures.

b. PACNAVFACENGCOM will:

(1) Review and approve budget and buy lists.

(2) Budget funds in appropriate fiscal year.

(3) Approve items for procurement and provide funds. In general, equipment that is available from Government schedules will be procured by CBC Port Hueneme. Activity purchases will include installation contracts and locally available equipment.

(4) Disseminate information to assist the activities in the budgeting and procurement process.

(5) Provide on-site assistance on collateral equipment Patters, review existing equipment usage and inspect completed facilities.



PAUL A. CHAPLA  
Vice Commander

Distribution: (See page 5)

1 MAR 1989

**Distribution:**

PACNAVFACENGCOMINST 5605.2R

Lists II and III

X-1, 4, 6, 12-15, 17, 18, 25

X-2, 1, 3, 16, 19, 24-26, 40

X-4, 4, 7, 13, 16, 35, 36, 37

X-5, 3, 4, 8

X-6, 1, 3, 7, 13

x-7, 1

x-9, 1, 3-5, 10

CBC Port Hueneme

ROICCPAC

**Stocked at:**

Pacific Division

Naval Facilities Engineering Command

Pearl Harbor, HI 96860-7300

1 MAR 1989

60J COLLATERAL EQUIPMENT BUDGET LIST  
14ND PACDIV 4-4405/1 (9-79)

DATE: 27 Feb 87

## ACTIVITY (Name and Location)

COMFLEACT YOKOSUKA

## PROJECT TITLE

ADMINISTRATION BUILDING

PROJ. NO.

GJ-42

BOD

MAR 90

CATEGORY ON FUNDING REQ'MTS	ITEM/EQUIPMENT DESCRIPTION	QUAN- TITY	UNIT OF ISSUE	UNIT PRICE	TOTAL COST
1. <u>Expense Items</u>					
	Wastebasket	40	EA	6.20	248.00
	Desk	10	EA	250.00	2,500.00
	File	10	EA	150.00	1,500.00
	Chair	6	EA	120.00	720.00
	Chair	10	EA	150.00	1,500.00
	Shelving	144	LF	4.00	576.00
	Clothes Rack	2	EA	50.00	100.00
	Worktable	8	EA	120.00	960.00
	Chair, Lounge	6	EA	100.00	600.00
	Sofa	3	EA	300.00	900.00
	Storage Cabinet	5	EA	150.00	750.00
	Typewriter	10	EA	600.00	6,000.00
	Typewriter Stand	10	EA	100.00	1,000.00
	Lecturn	1	EA	250.00	250.00
	White Board	2	EA	150.00	300.00
	Calculator	10	EA	75.00	750.00
	Table	4	EA	90.00	360.00
	Bookcase	7	EA	75.00	525.00
	Lamp	4	EA	50.00	200.00
	Table	4	EA	75.00	300.00
	Clock	15	EA	15.00	225.00
	Costumer	4	EA	50.00	200.00
	Vacuum	2	EA	150.00	300.00
	Drapes	20	EA	200.00	4,000.00
	Projector	1	EA	250.00	250.00
	VCR	1	EA	400.00	400.00
	TOTAL EXPENSE ITEMS				\$25,414.00
	8% Escalation				2,033.00
	Sub-Total				\$27,447.00
	5% Contingency				1,372.00
	Sub-Total				\$28,819.00
	4% Packing/Crating				1,152.00
	TOTAL (Rounded)				\$29,971.00
	Installation				4,000.00
	TOTAL (Rounded)				\$34,000.00

1 MAR 1989

GOJ COLLATERAL EQUIPMENT BUDGET LIST

14ND PACDIV 4-4405/1 (9-79)

DATE: 27 Feb 87

ACTIVITY (Name and Location)

COMFLEACT YOKOSUKA

PROJECT TITLE

ADMINISTRATION BUILDING

PROJ. NO.

GJ-42

BOD

MAR 90

CATEGORY ON FUNDING REQ'MTS	ITEM/EQUIPMENT DESCRIPTION	QUANTITY	UNIT OF ISSUE	UNIT PRICE	TOTAL COST
2. <u>Investment Items</u>	Shredder	1	EA	6,000.00	6,000.00
	TOTAL INVESTMENT ITEM				\$6,000.00
	8% Escalation				480.00
	Sub-Total				\$6,480.00
	5% Contingency				324.00
	Sub-Total				\$6,804.00
	4% Packing/Crating				272.00
	TOTAL (Rounded)				\$7,100.00
	SUMMARY:				
	Expense Items (O&MN)				\$34,000.00
	Investment Items (OPN)				7,100.00
					\$41,100.00
3. <u>Funds from Other Sources</u>	Air Conditioning System	10	TONS	5,000.00	\$50,000.00
	Sink	3	EA	300.00	900.00
	Wallpaper	1	LO		10,000.00
					\$60,900.00
4. <u>Equipment on Hand</u>	A. <u>Expense Items</u>				
	Desk, Executive	2	EA		
	Chair, Executive	2	EA		
	Desk, Clerical	5	EA		
	Chair, Clerical	5	EA		
	Typewriter, Manual	2	EA		
	Typewriter, Electr. 13"	5	EA		
	Table, Office	2	EA		
	Chair, w/o Arms	19	EA		
	Calculator	5	EA		
	Cabinets, File, 5 dr	21	EA		
	Cabinets, File, 2 dr	5	EA		
	Safe, Cabinet, Port.	12	EA		
	Costumer/Clothes Racks	12	EA		\$10,000.00

RECEIVED AT COMNAVSTA YOKOSUKA

1 MAR 1989

# FINAL

## FACILITIES IMPROVEMENT PROGRAM

CLASSIFIED RESPONSIBILITY OF GOJ/USC FOR FURNISHING/  
INSTALLATION OF EQUIPMENT, ETC.

提供施設整備

機器類の目次提供区分

目次

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3	機器類の目次提供区分について (英文)	3	3	CLASSIFIED RESPONSIBILITY OF GOJ/USC FOR FURNISHING/INSTALLATION OF EQUIPMENT (ENGLISH)	3
4	提供施設リスト 建築工事	4	4	LIST OF FURNISHED EQUIPMENT ARCH WORK	4
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91 122 122

D F A A

防衛施設庁

ENCLOSURE (2)

1 MAR 1989

1 April, 1988

F I N A L

Classified Responsibility of GOJ/USG for Furnishing/  
Installation of Equipment, Etc. for FIP Projects

1. Equipment furnished by FIP projects will be limited to those whose installation are authorized by prevailing DOD Construction Criteria Manual and pertinent Japanese laws and regulations. The list of furnished equipment (attachment 1) will be utilized for classified responsibility of COJ/USG for furnishing/ installation Of equipment, etc. for FIP projects.

2. The responsibility of GOJ and USC for furnishing and installation of equipment, etc. furnished by FIP projects will generally be classified as follows:

a. Equipment, etc. to be furnished and installed by the GOJ:

(1) Built-in furniture and installed equipment such as shelves, kitchen equipment, reefer and freezer rooms.

(2) Equipment, etc. that are essential to the proper use of applicable facility and fixed., such as crane, equipment for gas station, and telephone switchboard,

b. Equipment, etc. to be furnished and installed by the USC:

Movable properties and fixtures (such as lockers and machine tools).

c. Equipment, etc. to be furnished by the USG and installed by the GOJ;

(1) Equipment, etc. that are required to be included as part of the project, such as fixtures requiring drainage, disposers, and equipment, etc. not available in Japan.

(2) Other items that it is considered more appropriate for the GOJ to install in relation to the interior finish, such as carpet and wall paper.

3. Equipment, etc. to be installed by the GOJ as indicated in paras 2a and 2c, above, must be fixed permanently. However, those equipment, etc. indicated in para 2c, above, will be furnished by the USC at such a time as specified in a construction schedule prepared by the local DFAB and be the same as described in the specifications coordinated at the stage of development of construction drawings. If not received by the GOJ at a required time, equipment will be installed by the USC.

4. Equipment not listed in the attached list will be coordinated between GOJ and USC on a case by case basis.

5. Definition of portable and fixed equipment will be based on the attachment 2.

提供機器リスト  
 LIST OF FURNISHED EQUIPMENT

FINAL.

O-GOJ·F/GOJ·I  
 Δ-USC·F/GOJ·I  
 X-USC·F/USC·I

1. 建築工事 (ARCH WORK)

NO	機 器 名	NAME OF EQUIPMENT	提供区分 CODE	備 考 REMARKS
1	ブラインドボックス	BLIND BOX	O	
2	ブ ラ イ ン ド	BLIND	X	
3	カーテンボックス	CURTAIN BOX	O	
4	カーテンレール	CURTAIN RAIL (ROD)	O	
5	カ ー テ ン	CURTAIN	X	
6	アコーディオンドア	ACCORDION DOOR	O	
7	フォールディングドア	FOLDING DOOR	O	
8	パ ー テ ー シ ョ ン	PARTITION	O	
9	掲示板・黒板・白板	BULLETIN BOARD, WHITE/BLACK BOARD	O	
10	棚類 (木・鋼製)	SHELF (WOOD, STEEL)	O	
11	〃 (大倉庫用)	RACK (WAREHOUSE-TYPE)	X	ONLY NON-AUTOMATED RACKS ARE CEO FUNDED
12	〃 (図書室用)	BOOK SHELF (LIBRARY-TYPE)	X	
13	加工 食 器	STAINLESS STEEL SHELF (KITCHEN)	O	
14	陳 列 棚	DISPLAY SHELVING	O	但し、トロフィーケースを除く NO TROPHY CASE WILL BE PRO- VIDED.
15	作 業 台	WORK TABLE	O	
16	カ ウ ン タ ー	COUNTER	O	
17	スチールロッカー	STEEL LOCKER	X	
18	ベ ッ プ	BED	X	
19	ベンチ (木製)	BENCH (WOOD)	O	
20	座 談 ユ ニ ッ ト	CHAIR (LOBBY, WAITING AREA ETC.)	X	
21	アイロン台	IRONING TABLE	O	
22	カ ー ペ ッ ト	CARPET	Δ	
23	ビニールクロス	VINYL WALL COVERING	Δ	
24	私 書 箱	MAIL BOX	Δ	
25	郵 便 受	LETTER BOX	O	
26	屋内電話ブース	TELEPHONE BOOTH-INTERIOR	O	
27	ペイントブース	PAINT BOOTH	O	
28	組立型ペイントブース	PREFABRICATED PAINT BOOTH	X	
29	実験用キャビネット	LABORATORY CASEWORK	O	
30	金 庫 扉	VAULT DOOR	O	
31	夜 間 金 庫	NIGHT DEPOSITORY	X	
32	アイスコア	PEEP HOLE	O	



1 MAR 1989

提供機器リスト  
LIST OF FURNISHED EQUIPMENT

NO-2

FINAL

O-COJ-F/COJ-I  
Δ-USG-F/GOJ-I  
X-USG-F/USG-I

NO	機 器 名	NAME OF EQUIPMENT	提供区分 CODE	備 考 REMARKS
33	ホースラック床置型	HOSE RACK-FLOOR MOUNTED	O	
34	ホースラック電動型	HOSE RACK-ELECT. OPERATED	O	
35	ステンレス流し	STAINLESS STEEL SINK	O	
36	調理台	KITCHEN CABINET (BASE)/ WORKTABLE	O	
37	ショーケース	SHOW CASE (FREE STANDING TYPE)	Δ	
38	"	SHOW CASE (BUILT-IN & PASS THROUGH)	O	
39	サラダ冷蔵テーブル	COLD FOOD TABLE (SALAD)	Δ	
40	卵検査ブース	EGG CANDLING BOOTH	O	
41	発酵箱	FERMENTATION BOX	X	
41	電気錠	ELECTRICAL LOCK (CYPHER)	O	
42	可動床	ACCESS FLOOR	O	
43	固定座席 (劇場用)	THEATER SEATS-FIXED TYPE	O	
44	固定座席 (教会用)	FIXED SEATING AND PEV	O	
45	祭壇 (教会用)	CHANCEL	O	
46	X線用シャ-オスフィン	X-RAY ILLUMINATOR	O	46-48以外の医療器具については、その部で中央レベルにて調整する。 MEDICAL EQUIPMENT OTHER THAN THOSE INDICATED IN ITEM NOS 46 THROUGH 48 WILL BE COORDINATED AT THE CENTRAL LEVEL ON A CASE BY CASE BASIS.
47	歯科用ユーティリティセンター	UTILITY CENTER DENTAL	Δ	
48	診察台	MEDICAL EXAMINATION TABLES	X	
49	どん張	THEATER DRAPERY	X	
50	映画スクリーン	MOVIE SCREEN	O	
51	スクリーン(OHP)	SCREEN (OHP-TYPE)	X	
52	スクリーンボックス	SCREEN BOX (OHP-TYPE)	O	
53	洗剤席 (収納型)	BLEACHERS (FOLDING)	Δ	
54	" (固定型)	BLEACHERS (PERMANENT)	O	
54	固定ステージ	FIXED STAGE	O	
55	折り畳み式ステージ	FOLDING STAGE	X	
56	可動式テーブル	FOLDING TABLES	X	
57	遊戯器具	RECREATIONAL EQUIP. (MOVABLE)	X	
58	体育館用床は引き	GYMNASIUM FLOOR MARKING	O	
59	体育館用ネット仕切	GYMNASIUM NET PARTITION	X	
60	バスケットボールバックボード	BASKETBALL BACKBOARD	O	
61	サウナ室	SALNA	O	
62	全身鏡	FULL VIEW MIRROR	O	

1 MAR 1989

提供機器リスト  
LIST OF FURNISHED EQUIPMENT

NO-3

## FINAL

O-GOJ-F/GOJ-I  
 Δ-USG-F/GOJ-I  
 X-USG-F/USG-I

## 2. 機械設備工事 (MECH WORK)

NO	機 器 名	NAME OF EQUIPMENT	提供区分 CODE	備 考 REMARKS
1	金 銭 登 録 機	CASH REGISTER	X	
2	食 肉 包 装 機	MEAT PACKAGING MACHINE	X	
3	洗 衣 機 (家庭用)	WASHER (FOR DOMESTIC)	X	
4	洗 衣 機 (業務用)	WASHER (FOR COMMERCIAL)	Δ	
5	乾 衣 機 (家庭用)	DRYER (FOR DOMESTIC)	X	
6	乾 衣 機 (業務用)	DRYER (FOR COMMERCIAL)	Δ	
7	厨 房 機 器 (固定型)	KITCHEN EQUIPMENT (FIXED)	Δ	
8	厨 房 機 器 (移動型)	KITCHEN EQUIPMENT (MOVABLE)	X	
9	デ ィ ス ポ ー ザ ー	DISPOSAL	Δ	
10	キ ッ チ ン フ ー ド	KITCHEN HOOD	O	
11	煙 灰 排 出 フ ー ド	FUME EXHAUST/ HOOD	O	
12	冷 蔵 庫 (家庭用)	REFRIGERATOR (FOR DOMESTIC)	X	
13	冷 蔵 庫 (業務用)	REFRIGERATOR (FOR COMMERCIAL)	Δ	
14	製 氷 機	ICE MAKER	Δ	
15	冷 凍 ・ 冷 蔵 室	REEFER AND FREEZER ROOM	O	
16	既 設 型 冷 凍 ・ 冷 蔵 室	" (PREFABRICATED)	X	
17	冷 媒 配 管	REFRIGERANT PIPING	O	
18	冷 凍 機	REFRIGERATOR CONDENSING UNIT	O	
19	水 飲 機 (一般用)	ELECTRIC WATER COOLER (DISPENSER)	Δ	
20	" (身 障 者 用)	" (HANDICAPPED)	Δ	
21	非 常 用 洗 眼 器 シ ャ ワ ー	EMERGENCY SHOWER/ EYE WASH UNIT	O	
22	ジ ャ ー ツ バ ス	JACUZZI (JET BATH)	O	
23	サ ウ ナ 炉	SALINA HEATER	X	
24	カ ー リ フ ト	CAR LIFT	O	
25	冷 油 機	LUBRICATOR	O	
26	空 気 圧 縮 機	AIR COMPRESSOR	O	
27	車 両 点 検 用 機 器	VEHICLE REPAIR EQUIPMENT	X	
28	ホ イ ス ト ク レ ー ン	HOIST CRANE	O	
29	走 行 ク レ ー ン	BRIDGE CRANE	O	
30	同 台 調 整 機	DOCK LEVELER	O	
31	ダ ー ス ト 集 じん 機	DUST COLLECTOR	O	
32	自 動 販 売 機	VENDING MACHINE	X	









1 MAR 1989

# FINAL

## 機器の定義

別紙-2

### 1. 移動機器

- (a) 移動が出来るよう設計され、容易に持ち運びまたは移動が出来る。  
及び
- (b) ユーティリティの接続/切り離しは工具なしで行われる。

### 2. 固定機器

- (a) 通常は機械的用法によって建物主要部に固定され、長期間1箇所に設置される。  
及び
- (b) ユーティリティの接続/切り離しは工具を用いて行われる。

Attachment 2

## Definition of equipment

### 1. Portable Equipment:

- (a) designed for portability and can be carried or move about with ease;  
and
- (b) utilities connections/disconnections are accomplished without tools.

1 MAR 1989

GOJ COLLATERAL EQUIPMENT SUMMARIZED BUY LIST  
14ND PACDIV 4-4405/1 (9-79)

DATE: 30 Mar 89

## ACTIVITY (Name and Location)

COMFLEACT YOKOSUKA

## PROJECT TITLE

ADMINISTRATION BUILDING

PROJ. NO.

FP-42

BOD

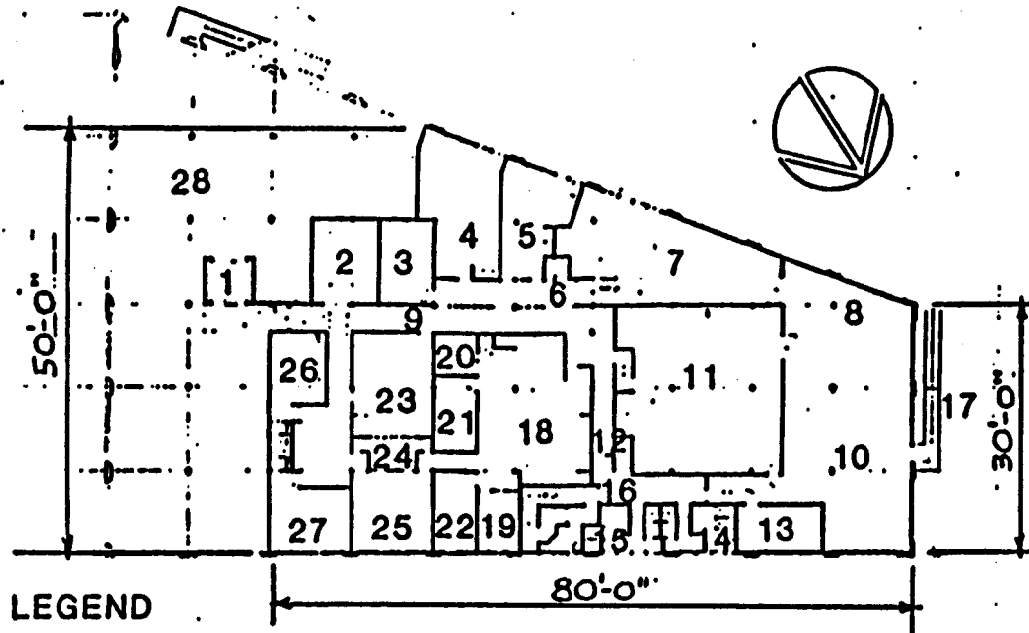
MAR 90

CATEGORY ON FUNDING REQ'MTS	ITEM/EQUIPMENT DESCRIPTION	QUAN- TITY	UNIT OF ISSUE	UNIT PRICE	TOTAL COST
CBC Procurement Expense Items					
Line Item 1	Wastebasket	40	EA	6.20	248.00
2	Desk	10	EA	250.00	2,500.00
3	File	10	EA	150.00	1,500.00
4	Chair	6	EA	120.00	720.00
5	Chair	10	EA	150.00	1,500.00
6	Shelving	144	LF	4.00	576.00
7	Clothes Rack	2	EA	50.00	100.00
8	Worktable	8	EA	120.00	960.00
9	Chair, Lounge	6	EA	100.00	600.00
10	Sofa	3	EA	300.00	900.00
11	Storage Cabinet	5	EA	150.00	750.00
12	Typewriter	10	EA	600.00	6,000.00
13	Typewriter Stand	10	EA	100.00	1,000.00
14	Lecturn	1	EA	250.00	250.00
15	White Board	2	EA	150.00	300.00
16	Calculator	10	EA	75.00	750.00
17	Table	4	EA	90.00	360.00
18	Bookcase	7	EA	75.00	525.00
19	Lamp	4	EA	50.00	200.00
20	Table	4	EA	75.00	300.00
21	Clock	15	EA	15.00	225.00
22	Costumer	4	EA	50.00	200.00
23	Vacuum	2	EA	150.00	300.00
	TOTAL EXPENSE ITEMS-				\$20,764.00
Investment Items					
Line Item 24	Shredder	1	EA	6,750.00	6,750.00
	TOTAL EQUIPMENT				\$27,514.00
	4% Packing and Crating				1,101.00
	TOTAL (Rounded)				\$28,700.00
Local Procurement					
Line Item 25	Drapes	20	EA	250.00	5,000.00
26	Slide Projector	1	EA	300.00	300.00
27	VCR	1	EA	500.00	500.00
	TOTAL				\$5,800.00
	PROJECT TOTAL				\$34,500.00





1 MAR 1989



**LEGEND**

- |                                |                        |
|--------------------------------|------------------------|
| 1. Existing renovated Elevator | 15. Women's Toilet     |
| 2. Mechanical Equipment        | 16. Existing Stair     |
| 3. Supply Room                 | 17. New Stair          |
| 4. Administration              | 18. Scheduling Office  |
| 5. Crew's lounge               | 19. OPS Officer        |
| 6. Janitor                     | 20. ADP Officer        |
| 7. Maintenance                 | 21. ATC                |
| 8. Maintenance Area            | 22. Area OPS           |
| 9. Corridor                    | 23. Training Room      |
| 10. Equipment Room             | 24. Media Room         |
| 11. Operations Room            | 25. Conference         |
| 12. Quarter Deck               | 26. Executive Officer  |
| 13. Secure Equipment Room      | 27. Commanding Officer |
| 14. Men's Toilet               | 28. Unassigned Space   |

FP-42 ADMINISTRATION BUILDING  
COMFLEACT YOKOSUKA JAPAN

1 MAR 1989

**FURNITURE/EQUIPMENT PLACEMENT SHEET**

Place this list on the door or wall of the room indicated below

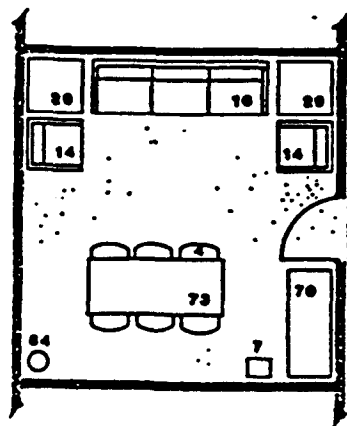
NOTE: See floor plan section  C

PROJECT TITLE: Administration Building, FP-42  
COMFLEACT Yokosuka

ROOM NUMBER/TITLE: Room 25

ROOM FINISH COLORS	Base Wall: Off White Accent Wall: None	Floor: Rust Carpet	Ceiling: White Acoustical Tile
--------------------	---	--------------------	--------------------------------

Quantity	Line Item	Stock Number	Description (Manufacturer, Item, Model No.)
1	1	384-2	WASTEBASKET: Rubbermaid \$2823
1	22	7195-00-004-0652	COSTUMER: GSA
1	11	NIS-F-4076	STORAGE CABINET: Cervitor #CS 60-48
1	20	184-15	TABLE: Conference 30" X 72" Howe #1360V
6	4	184-14	CHAIR: Conference American Seating #8710
2	9	270-3	CHAIR: Lounge, Upholstered Davis #G 6860
1	10	270-3	SOFA: Three Seat, Upholstered Davis #HG 6800
2	17	7110-01-056-1980	TABLE: End, 30" Square Barton



Description Uncartoned Shipping Weight	Model No. (Item No.)	Base	GRADE		
			I	II	III
Low Back Executive Swivel W 26 D 27 H 32 1/2 Seat Ht. 18 1/2 Arm Ht. 25 1/2 3 Yds. 37 Lbs.	1420-SH (496-6)	Chrome Bronze Oak, Wal.	305 313	313 315	NA NA
Low Back Executive Swivel Open Arm W 26 D 27 H 32 1/2 Seat Ht. 18 1/2 Arm Ht. 25 1/2 3 Yds. 37 Lbs.	1420-OA-SH (496-6)	Chrome Bronze Oak, Wal.	297 315	305 315	NA NA



1 MAR 1988

Description Uncartoned Shipping Weight	Model No. (Item No.)	Base	GRADE		
			I	II	III
Arm Chair Sled Base W 24 1/2 D 27 1/2 H 32 1/2 Seat Ht. 18 1/2 Arm Ht. 24 1/2 2 Yds. 22 Lbs.	1420-SB (496-5)	Oak Walnut	231 257	238 264	254 280



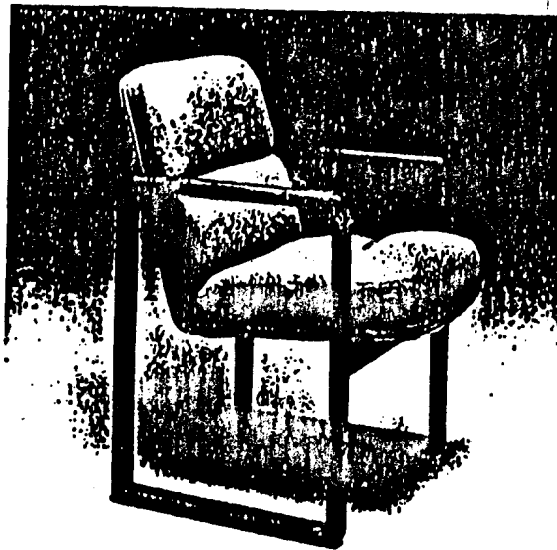
Arm Chair - Sled Base Full Panel W 24 1/2 D 27 1/2 H 32 1/2 Seat Ht. 18 1/2 Arm Ht. 24 1/2 4 Yds. 31 Lbs.	1420-SB-PA (496-5)	Oak Walnut	268 294	279 305	302 NA
---	-----------------------	---------------	------------	------------	-----------



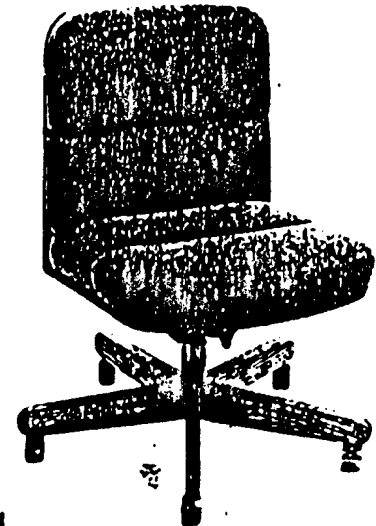
Posture Back Armless Executive Chair W 21 1/2 D 25 H 33 Seat Ht. 18 1/4 2 3/4 Yds. 35 Lbs.	1423-SH (496-6)	Chrome Bronze Oak, Wal.	293 311	302 315	315 NA
---	--------------------	-------------------------------	------------	------------	-----------



1420-SH



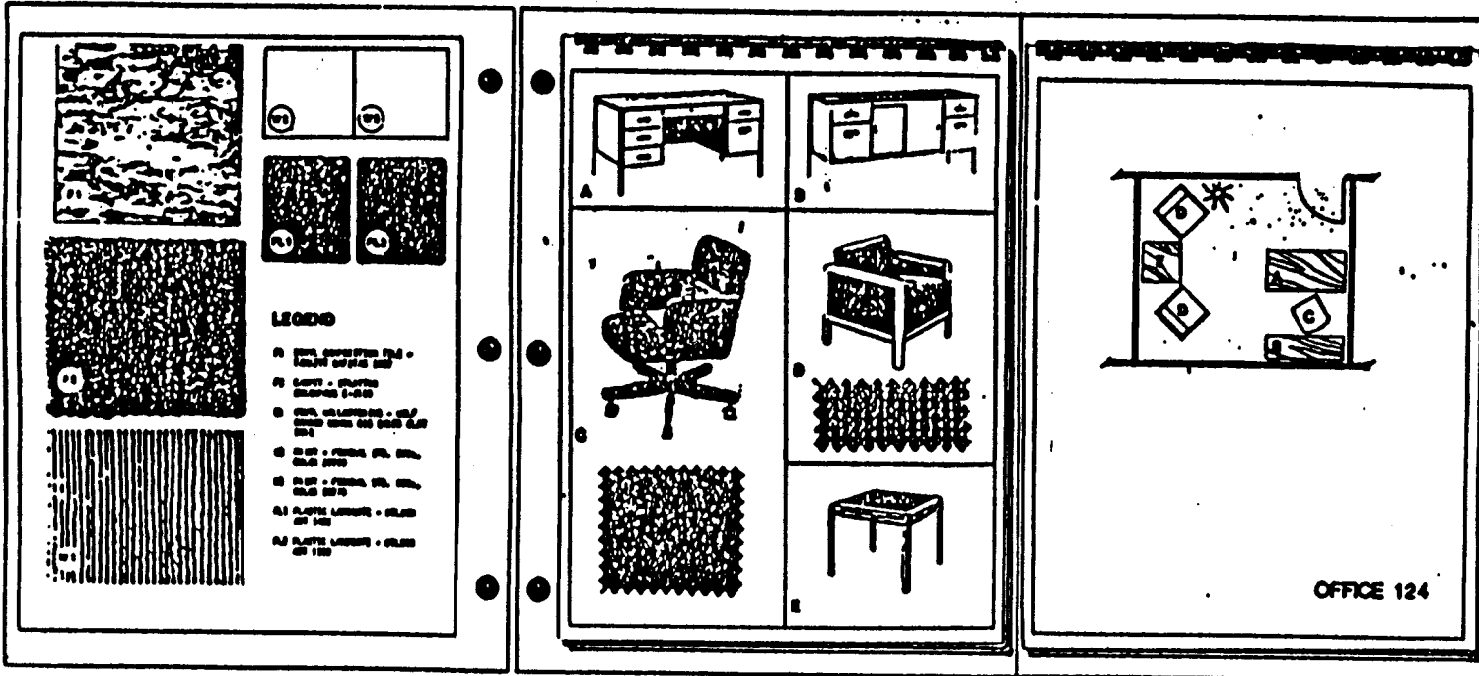
1420-SB



1423-SH

ORDERING PROCEDURE: PLEASE SPECIFY THE FOLLOWING WITH EVERY ORDER. 1. MODEL 2. BASE 3. FINISH 4. TEXTILE  
 BASE: SEE GENERAL INFORMATION, PAGE 1  
 FINISH: SEE GENERAL INFORMATION, PAGE 1  
 SEAT HEIGHT: STATIONARY SEAT HEIGHT IS 18" (EXECUTIVE CHAIRS)

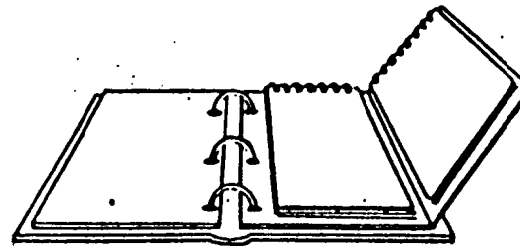
### EXAMPLE OF INTERIOR DESIGN BROCHURE



Structural finishes

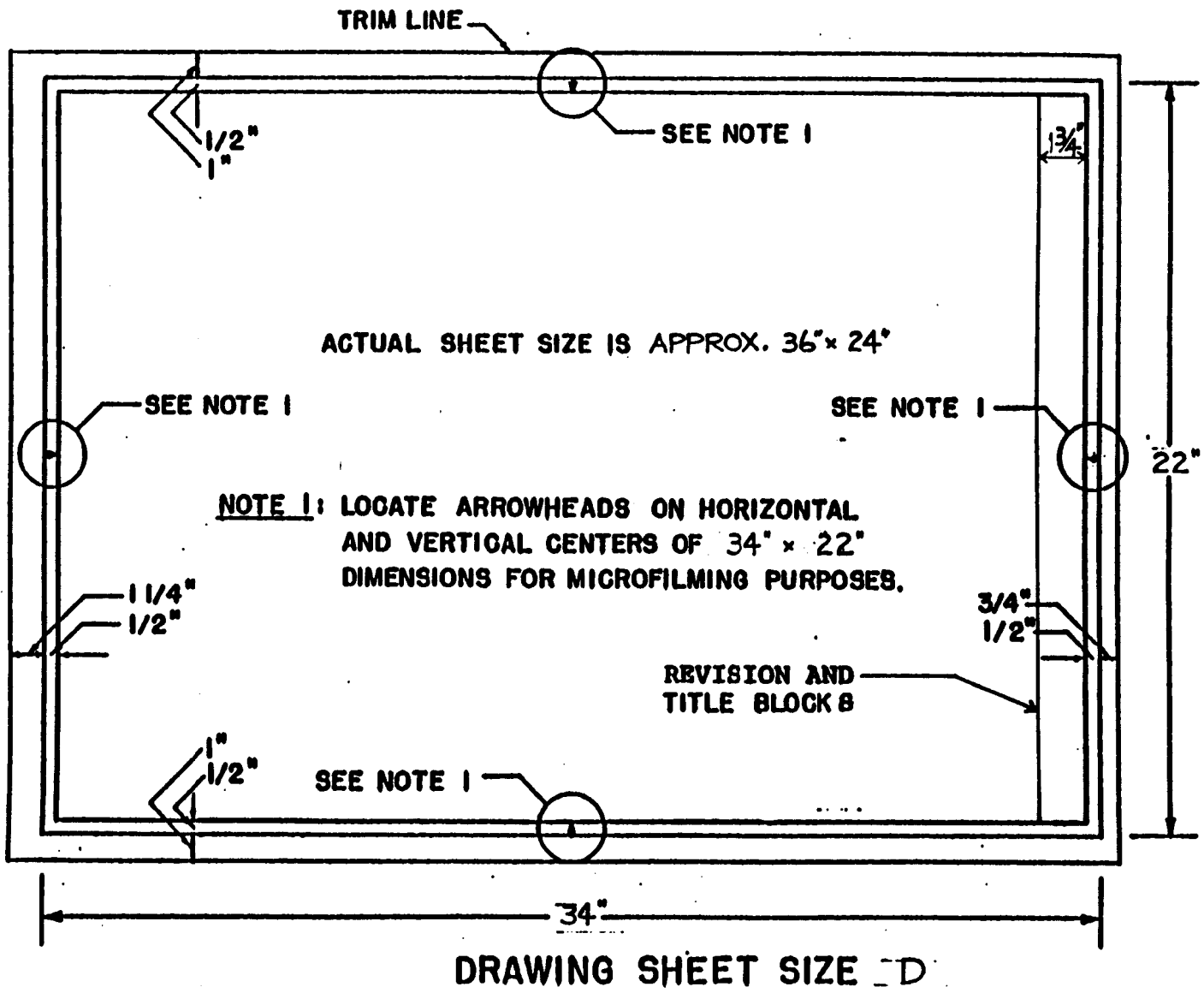
Furniture illustrations  
Color samples

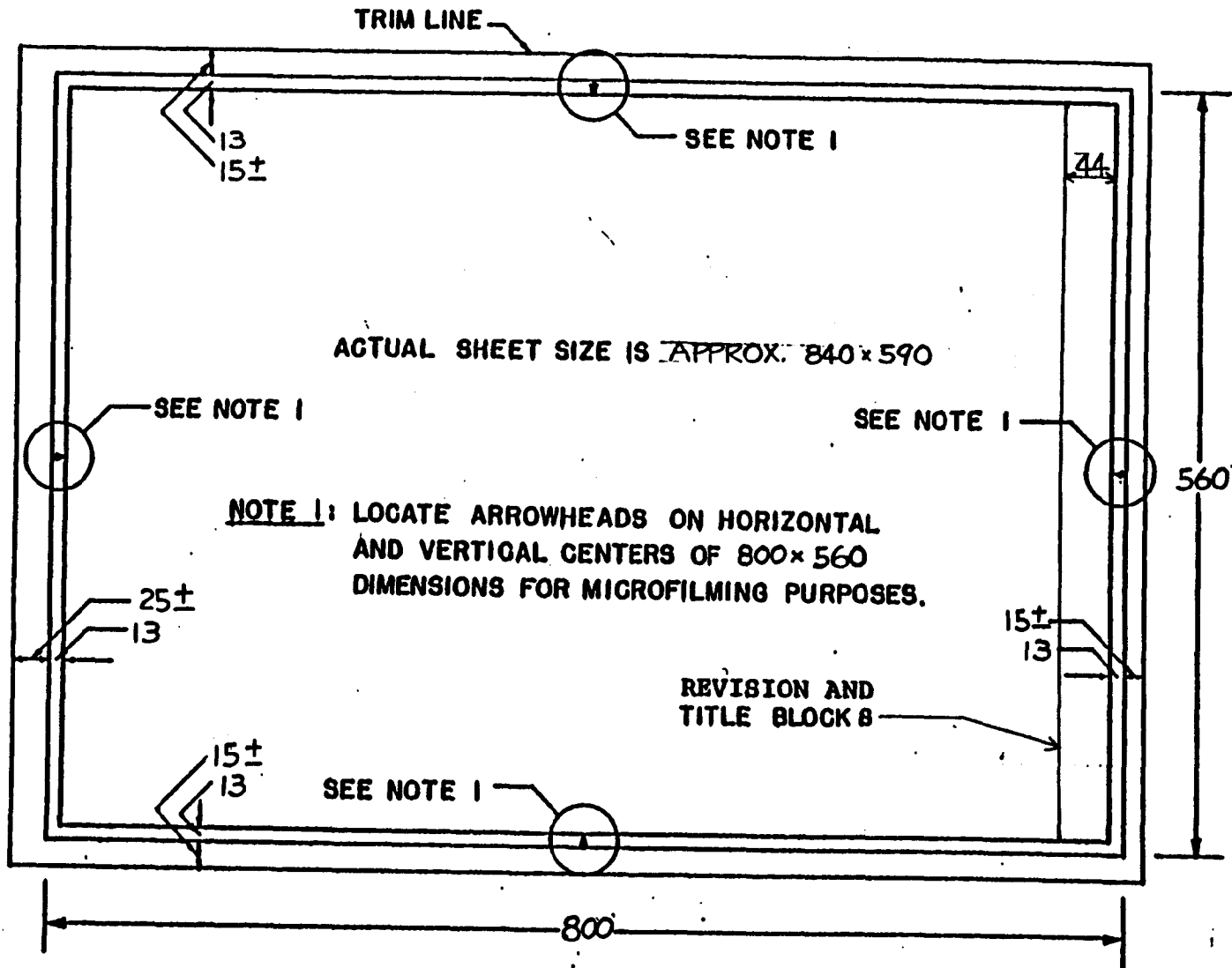
Floor plans



## APPENDIX N: STANDARD DRAWING SHEET

1. Standard Drawing Sheet Formats





DRAWING SHEET SIZE A1



UPPER VALUE FOR D-SIZE DRAWING (INCHES)

LOWER VALUE FOR A-1 SIZE DRAWING (MM)

IF OUTLINE SPACES IS LESS THAN SIZE/SCALE DRAWING SCALE

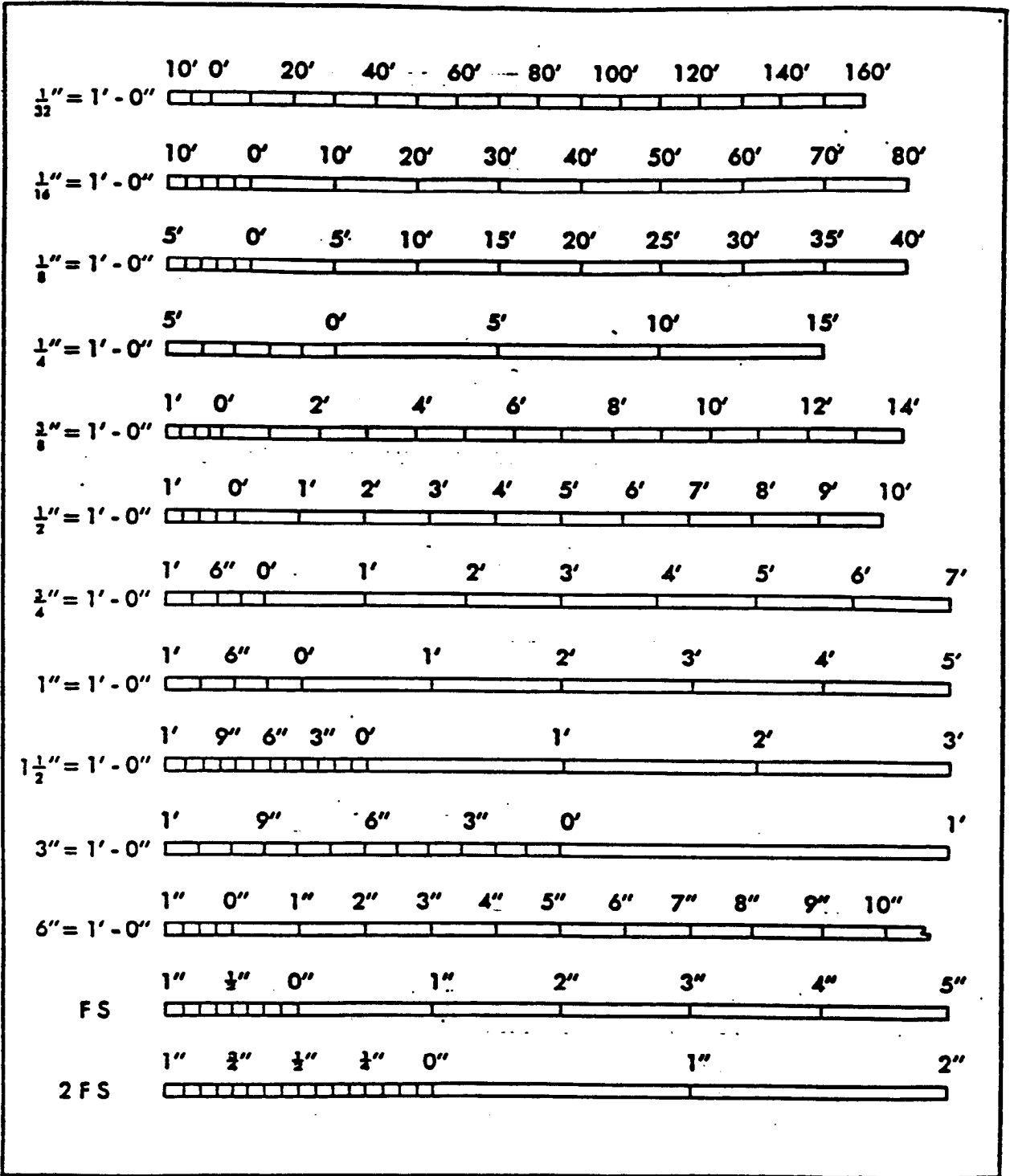
9/8" - 3/4" 1/2" 3/4"  
 11-10 - 19 13 19

SHEET NO. OF TOTAL SHEETS DATE DRAWN BY CHECKED BY APPROVED BY	DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND OICC FAR EAST WASHINGTON, D.C.	TITLE AREA	PWC/OICC/ROCC REVIEW SHEET ACC DRN: _____ ELECT: _____ DESIGNER: _____ CIVIL: _____ PDE/EIC: _____ FIRE PROT: _____ ARCH: _____ V-E: _____ STRUCT: _____ ROCC: _____ MECH: _____				REVISIONS NO. DESCRIPTION PROP. BY DATE APPROVED
			APPROVED BY: _____ DATE: _____ FUNCTIONAL APPROVAL: _____ DATE: _____ QUANTIFIED BY: _____ TITLE: _____ DATE: _____				
1/2"	2 1/2"	3 1/2"	1 3/4"	2 3/4"	2 3/4"	5 3/4"	1/2"
13	64	140	44	70	70	140	13

NOT TO SCALE

## APPENDIX 0: EXAMPLE GRAPHIC SCALES

1. Engineering
2. Architectural
3. Metric



**FIGURE 1**  
Graphic Scales—Architectural Type

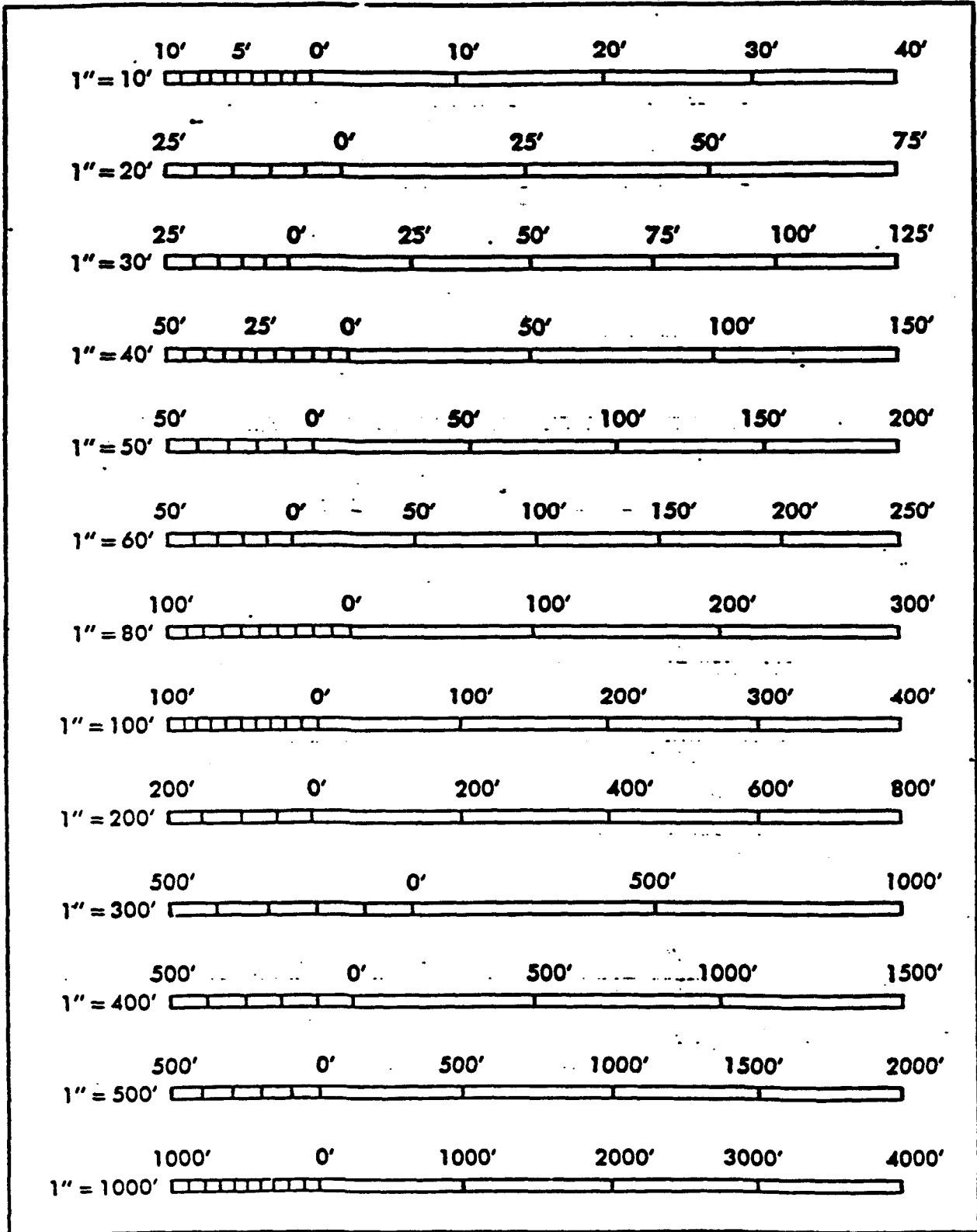


FIGURE 2  
Graphic Scales—Engineering Type

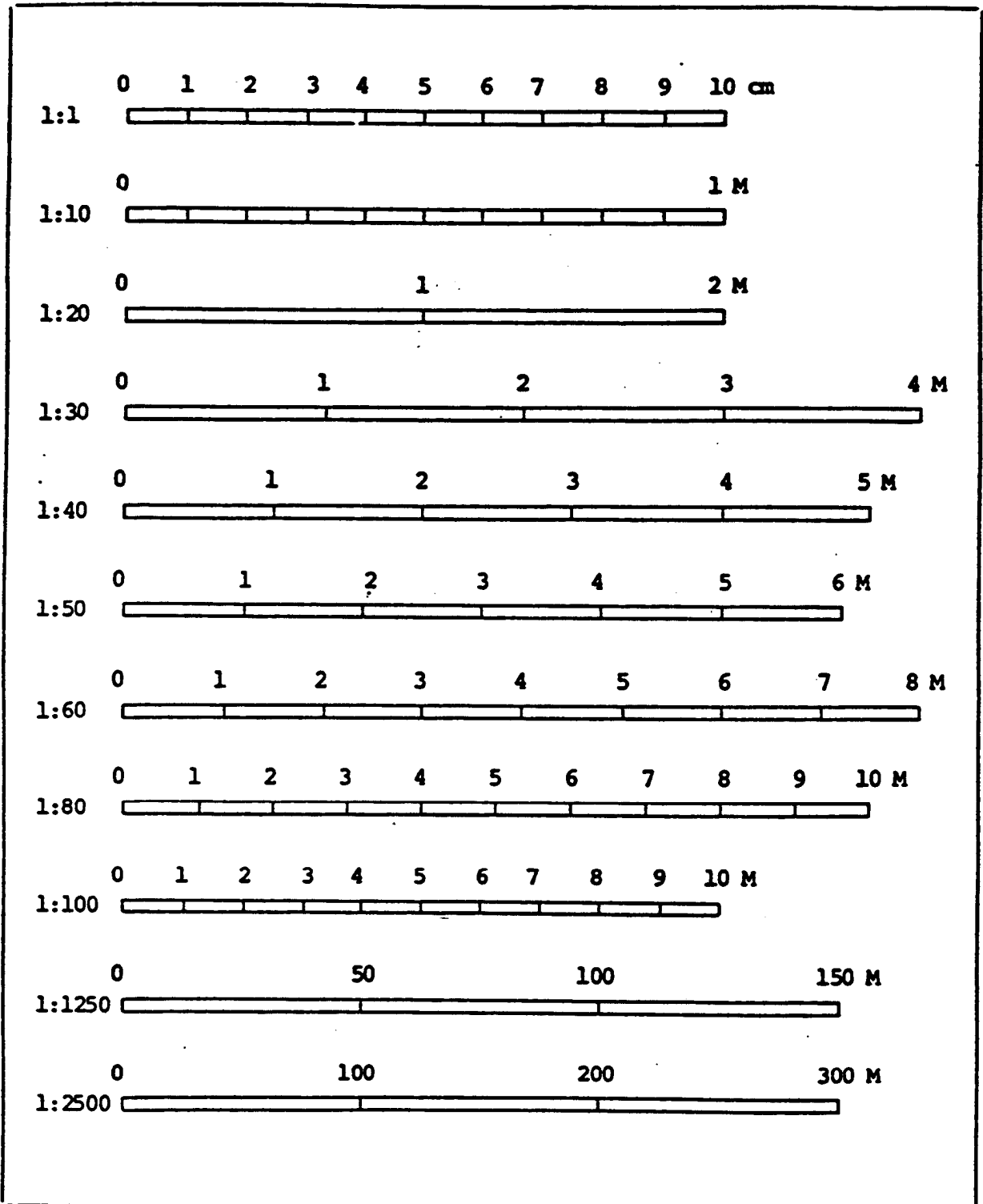


FIGURE 3

Metric Graphic Scales

## APPENDIX P: PREPARATION OF SPECIFICATIONS

1. Instructions for the Preparation of Specifications for Construction Contracts

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INSTRUCTIONS  
FORMAT AND PARAGRAPHS  
FOR  
THE PREPARATION OF TECHNICAL SECTIONS OF SPECIFICATIONS  
FOR  
CONSTRUCTION. CONTRACTS

---

PREPARED BY:  
FACILITIES ENGINEERING DEPARTMENT  
PUBLIC WORKS CENTER, YOKOSUKA, JAPAN

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## SECTION 1

### INTRODUCTION

1. PURPOSE: These instructions are for Architects-Engineers and Navy personnel in the preparation of contract specifications. They set forth NAVFACENGCOM policies, procedures, fundamentals, format of specifications, page layout, terminology, and miscellaneous directives. The technical content of each section will be different, but uniformity in the presentation of the technical requirements is required to save time and effort on the part of the specification writer and the Contractor. The end product is a project specification made up of many sections derived from NAVFAC guide specifications, together with special sections prepared by the project specification writer.

#### 2. POLICY/CONCEPT:

2.1 A-E firms shall, unless otherwise directed by the Government, conform to the requirements stated herein, in the A-E Guide, and the NAVFAC Design Manual HIL-HDBK 1006/1, Drawings and Specifications. The A-E shall contact the Specifications Section (Code 172.5) at the beginning of each new project to ensure he/She has the latest guide specifications, manuals, and instructions. The A-E will be fully accountable for the quality, accuracy, and technical adequacy of the specifications. Refer to Section 2 of the A-E Guide for general A-E quality control requirements.

2.1.1 The project specification has two main functions. It communicates the material and workmanship requirements of the project in the bidding phase, and provides a mechanism for assuring the quality of workmanship and materials during construction. Quality Assurance, Source Quality Control, and Field Quality Control, identified in Section 4 Format and Typing of Specifications, shall be clearly defined in each project specification. The Contractor is required to maintain Quality Control, while the government protects its interest by assuring that the Contractor's quality control organization is working effectively. Refer to Section 7 Quality Control for further details of the Contractor's and Government's roles.

2.2 Coordination of Specifications and Drawings: The A-E is solely responsible for ensuring complete coordination between the drawings and specifications. Numerous claims made against the Government result from inconsistencies or ambiguities between project specifications and drawings. Basically, the drawings should illustrate the extent, site, shape, and generic types of materials, and the relationship between materials. The specifications should describe the quality, performance, installation requirements, and the method of construction. The specifier should review the drawings to assure that information appearing on the drawings has

been covered in the specification, and that all requirements to accomplish the work are covered in detail on the drawings or described in the specifications. Conversely, those preparing the drawings should review the specifications to assure complete coordination. Quite often a simple detail, section, or note on the drawings makes it possible to eliminate lengthy, descriptive material from the specification and at the same time clarify the designer's intent. Conflicts or duplications between drawings and specifications must be eliminated. The terminology used in specifications and drawings must be identical.

2.2.1 A major source of confusion and poor quality specifications is the lack of coordination between the A-E and his consultants. These consultants frequently do not seem to "get the word." Often, they claim an unawareness of the instruction given the A-E and are found to be using obsolete guidance. The A-E shall ensure that all of his consultants are thoroughly familiar with the latest guidance.

2.3 Proprietary Specifications: (FAR 10.002 and 36.202)  
Proprietary or restrictive requirements shall not be used unless it is established conclusively that no substitute will serve the purpose. Specifications shall be written to permit bidding by any supplier whose equipment provides the functional, technical, and physical requirements of the project. Proprietary requirements shall not be included in specifications without PACNAVFACENGCOM Level I Contracting Officer approval. The Project Design Engineer (PDE) and the Contracting Officer for the construction project shall be notified and a copy of the approval document furnished for their use. If a proprietary item is authorized, the specification must state: "Notwithstanding any other provision of this contract, no other product will be acceptable."

2.3.1 Qualified Products. (PAR 9.2) The limitations pertaining to proprietary specifications do not apply to items on a qualified products list. However, such lists must be established and used in strict accordance with FAR 9.2 provisions.

2.3.2 The A-E shall submit the following information, in writing, to the Project Design Engineer (PDE), for authority to include proprietary specifications in a construction contract.

- a. Manufacturer, model number, address of manufacturer, cost, of the proprietary item, each, and total in the-project.
- b. Total cost of the project.
- c. Justification for the proprietary item:
  - (1) Cite the salient characteristics required.
  - (2) Cite laws, regulations, or Navy instructions requiring the necessary salient characteristics.
  - (3) Cite reasons of commercial availability.

- (4) Cite reasons why other available products cannot be used.
- (5) Cite any other reasons for proprietary requirements.

Note: Do not use life-cycle cost to justify a proprietary specification since it is not acceptable to NAVFACENGCOM.

2.3.3 Where small quantities of a special item are desired, sole source procurement may be authorized and the special item included as government-furnished material. For sole source procurement, the A-E shall provide justification as required above.

2.3.4 "Or Equal" Specifications: (FAR 10.004) Specifying items by naming a minimum of three acceptable commercial products followed by the words "or equal" is permitted under the following conditions: (a) There are no industry or government-type specifications for the item, (b) the item is a minor part of the work, and (c) the item cannot adequately be described because of its technically involved construction or composition. The salient characteristics of the item must be sufficiently detailed in the specification to establish the basis for determining the equality of nonlisted products.

2.4 Performance Specifications: (Purchase Description) (FAR 10.004) In some instances a performance specification may be more appropriate for use than design or descriptive specifications. Generally a performance specification indicates the required results, verifiable as meeting stipulated criteria, and free from unnecessary process limitations. Requirements such as fire endurance, toxicity, strength, durability and system output are stipulated. Performance specifications shall not be written so as to specify a product or a particular feature of a product proprietary to one manufacturer unless the Contracting Officer (Code 02) approval has been obtained.

2.5 Unrestricted Bidding: Specifications or purchase descriptions for procurement shall state only the actual minimum needs of the government and shall describe the supplies and services in a manner which will encourage maximum free competition in bidding, and eliminate, insofar as possible, any restrictive features which might limit acceptable offers to one supplier's product, or the products of a relatively few suppliers.

2.6 Experience Clauses: Generally, clauses requiring a Contractor to qualify for award of the project by demonstrating a stated level of experience, shall not be included in technical specifications. Procurement regulations require the government to award contracts to a "responsible bidder" and the Contract Clauses require the Contractor to maintain a competent superintendent and work force on the job. However, situations occur where absolute application of this prohibition is not practical. If experience clauses, in addition to the requirements in the Contract Clauses, are considered vital, application to a Level I Contracting Officer

shall be made for permission to include them. The application must include the proposed clause and complete justification for the requirement.

## 2.7 Warranty Clauses:

### 2.7.1 NAVFAC Policy: NAVFAC P-68. Subpart 46.7. states:

"Except where a warranty provision is included in the standard contract forms, it is the policy of NAVFACENGCOM not to include special warranty provisions. Past experience has established that Warranties increase contract costs while not significantly increasing the ability of the Government to obtain corrective action or reimbursement for obtaining corrective action by sources other than the contractor."

### 2.7.2 Standard Commercial Warranties; NAVFAC P-68, paragraph 46.709. states:

"Contracting officers may include a warranty clause which is standard or customary in the trade provided it is reasonably established that such clause will not increase the contract price, and that inclusion is in the best interest of the Government."

2.7.3 Warranty Clauses in an NFGS: NAVFAC policy stated in the two paragraphs above shall be observed. Generally, warranty clauses, other than those provided in the Contract Clauses. i.e., one-year warranty by the Contractor or a Manufacturer's standard commercial warranty such as a five-year warranty on all refrigerant compressors. shall not be included in a project specification. If warranty clauses, in addition to the requirements in the Contract Clauses. are considered vital, application shall be made to a Level I Contracting Officer. for permission to include them. The application must include the proposed warranty clause and complete justification for the requirement.

2.8 Experience and Warranty Clause Approval: Clauses contained in TS-Series guide specifications issued prior to 1 January 1975, shall be submitted to a Level 1, Contracting Officer, for approval prior to use in a project specification. NFGSs and TSs issued after 1 January 1975, which contain experience, warranty and other related clauses have been reviewed and approved by NAVFAC Code 021. These documents may be used without further approval or waiver.

2.9 Reviews: The Government will review the A-E's specification at several stages of completion to insure that they are (1) developed in conformance with NAVFAC criteria (2) within authorized scope, and (3) of an acceptable quality.

a. should the 35% submitted be required, the government review the overall organization of the specification as well as the

specific guides which the A-E intends to use in developing each technical section will be checked.

b. The Prefinal submittal shall be a copy of the final documents and should be ready for advertisement at this stage.

c. The A-E shall modify the specifications in accordance With PWC YOKOSUKA/OICC FAR EAST comments resulting from the reviews for subsequent submittals or give reasons for noncompliance. The fact that the specification has been completely typed in final form will not be accepted as an excuse for not modifying the specifications.

d. Comments made by reviewers shall in no way limit Or define the A-E's responsibility to provide a proper specification.

e. To make a smooth transition to the Prefinal submitted review, the A-E is invited, but not required to make an informal Submittal of a few (usually not more than 6) completed sections for review before the Prefinal/submitted submittal. The submittals should represent samples of the various consultants@ work. Comments made at this stage should be applied to the remainder of the sections as applicable.

\*\*\* END OF SECTION \*\*\*

## SECTION 2

### PROCUREMENT OF REFERENCE DOCUMENTS

1. AVAILABILITY: The reference documents for use in OICC FAR EAST projects are obtained from several sources. These sources are:

<u>Category</u>	<u>Source</u>
a. Federal Specifications and Standards	NPFC *
b. Military Specifications and Standards	NPFC *
c. Department of Defense Index of Specifications and Standards (DODISS)	NPFC *
d. Qualified Products List	NPFC *
e. NAVFAC P-34 Engineering and Design Criteria for Navy Facilities	PDE
f. NAVFAC Guide Specifications (NFGS and NAVFAC Standard Specifications	CSI Data Services **/ TS-Series) PDE
g. DOD Family Housing Specifications	PDE
h. PWC YOKOSUKA Modified Guide Specifications	NPFC *
i. Industry Standards (ASTM, ANSI, etc.)	PDE
j. Japanese Industrial Standards (JIS)	Issuing Agency Japanese Standards Association

\* NPFC - Naval Publications and Forms Center. Philadelphia. PA.

\*\* CSI Data Services - Attention: Mr. Robert N. Cohn. Military Specifications Manager, 400 Oser Ave., Hauppauge, N.Y. 11788 or call 1-800-516-235-3515. Complete sets of NAVFAC documents are available in the following forms: (Cost subject to changes.)

-WANG 8" Disks	- \$695.00
-ASCII 5-1/4" Disks	- \$650.00
-ASCII 9-Track Tape	- \$295.00
-Hard Copy	- \$295.00

#### 2. ORDERING REFERENCE DOCUMENTS FROM NPFC:

2.1 The Naval Publications and Forms Center (NPFC), Philadelphia, is the Department of Defense Single Stock Point (DOD-SSP) and Distribution Center for unclassified specifications and standards utilized throughout the Department of Defense for military procurement.

2.2 cost: Specifications and standards are issued to private industry on an "as ordered basis" without charge.

2.3 How to Order Specifications and Standards: A request can be initiated by telephone, telegraph, mail in any form, or bearer. However, it is preferred that private industry use a simplified order form, DD Form 1425, which includes a self-addressed label. Once a customer orders specifications and standards, he will automatically be provided sufficient blank forms to continually reorder in the preferred manner. All types of requests should be submitted in the following manner:

- a. Indicate complete mailing address (including zip code) and invitation-for-bid or construction contract number, and title where applicable.
- b. Indicate quantity of each document desired. Maximum issue: 10 each (no exception).
- c. List each desired specification or Standard by document symbol as recorded in the DODISS.
- d. List Federal Specifications in alphabetical order. List all others in numerical order. The following sequence of categories of material is preferred: Military Specifications, Military Standards, Federal Specifications and Standards, etc.
- e. Limit the number of line items ordered on each DD 1425 to five or less. include your address on self-addressed label. (See attached sample of DD 1425.)
- f. Telephone Requests, TELEX, and Western Union Messages:
  - (1) Telephone requests are permitted for urgent action only. If feasible, TELEX and Western Union messages are recommended in lieu of telephonic requests: Use TELEX Number 834295 or Western Union Number 710-670-1685.
  - (2) NPFC can only receive TELEX or Western Union messages: it cannot answer queries by TELEX or Western Union messages. Therefore, customers should include a full address and telephone number to insure an answer from NPFC.
  - (3) NPFC does not maintain files of TELEX or Western Union messages. so Cross references to former messages cannot be checked. Customers should resubmit the original message fully when following up on a previous message.
  - (4) To submit a request by telephone, call AREA CODE 215 697-3321. Duty Hours: 8 a.m. to 1:30 p.m.--Monday thru Friday (Philadelphia time). Off-duty telephone requests are serviced by automatic answering device 7 days a week.

(5) Customer requests are generally filled within 5 working days provided the material is on the shelf. This does not include transit or delivery time.

#### 2.4 Helpful Hints:

- a. Requests will not be backordered. Requesters will be notified to resubmit at a later date.
- b. Amendments and Revisions will be automatically issued with the basic specifications.
- c. Only end item specifications will be furnished. Referenced documents must be requested by individual document number.
- d. Slash sheets, such as MIL-E-1/306B, must be individually requested by document number. Slash sheets will not be issued as a set.
- e. Superseded or canceled specifications are not stocked at NPFC. These specifications must be processed through the procurement or contracting officer of the military activity having an interest in the document.
- f. Do not submit requests listing National Stock Numbers only. NPFC cannot cross-reference National Stock Numbers to applicable specification numbers.
- g. NPFC Philadelphia does not maintain a file of Invitations For Bid, Requests For Quotes, contracts, etc., so each individual document must be listed by document number when requested from NPFC.
- h. When submitting multiple requests, place full mailing address on each request..
- i. NPFC issues only printed documents.
- j. If handscribed requests are to be submitted, please use black or dark blue ink only;

#### 2.5 Subscription Service (Automatic Distribution):

2.5.1 New and/or revised releases of those Military and Federal Specifications and Standards (including Qualified Products Lists) which are to be listed in the DODISS are available on a subscription basis with automatic mailing upon payment of fees. This fee entitles the subscriber to receive, for a one year period, one copy each of all new or revised documents printed after the effective subscription date. (Documents issued prior to the subscription date must be ordered individually.)



2.5.2 Subscriptions will be accepted on a Federal Supply Class basis for a single class or for as many individual classes as the subscriber chooses. Available classes are listed according to subject (example: under Group 47, the title of FSC 4710 is "Pipe and Tube") in the "Cataloging Handbook H2-1". Copies of this publication can be obtained at no charge from:

Director, Navy Publications and  
Printing Service Detachment Office  
700 Robbins Avenue  
Philadelphia, PA. 19111

2.6 The procedure for submitting a Subscription Bequest is as follows:

- a. Address your request, in letter form, to the Director, Navy Publications and Printing Service Office at the address shown above, not NPFC.
- b. List the desired Federal Supply Classes.
- c. Enclose a certified bank check or money order payable to Treasurer of the United States. for \$13.00 for each Federal Supply Class. (Cost subject to change).
- d. Subscription to this service does not relieve Contractors of the responsibility for application of specifications of appropriate date in complying with military contracts.
- e. Documents will be distributed in printed form only.
- f. Specifications and Standards are distributed automatically to customers within 10 days of receipt at NPFC.

2.7 NOTE: Firms desiring to reproduce and redistribute unclassified and unrestricted specifications and standards documents in any form at a fee or for internal use may do so without reference to the Navy Department or any other element of the Department of Defense since the documents are in the public domain.

2.8 DODISS/SPECIAL INQUIRY DESK:

2.8.1 The Department of Defense Index of Specifications and Standards (DODISS) is a reference publication made available to private industry in microfiche or printed book format. The DODISS is a three-part listing of the following unclassified documents:

Military Specifications and Military Standards  
Federal Specifications and Federal Standards  
Military Handbooks  
Qualified Products Lists and Industry Documents  
Air Force-Navy Aeronautical Standards, and Aeronautical Design Standards

U.S. Air Force Specifications and Specification Bulletins  
Air Force-Navy Aeronautical Bulletins  
Cancellation lists and other departmental documents

2.8.2 The three parts are the "Alphabetic" listing (Part I), the "Numeric" listing (Part II), and the "Federal Supply Classification" listing (Part III).

2.9 Microfiche Edition:

2.9.1 The microfiche edition is imaged on 105 mm film at a 48X reduction ratio.

2.9.2 Automatic mailing of the microfiche DODISS is available to private industry on a subscription basis. Subscriptions should be accompanied by a certified bank check or money order for \$13.00, payable to Treasurer of the United States, and addressed to the Director, Navy Publications and Printing Service Office, 700 Bobbins Avenue, Philadelphia, PA 19111. The subscriber will receive updated DODISS every two months., Subscriptions cover a period of one year.

2.10 Printed editions of DODISS may be obtained from the Superintendent of Documents, Government Printing Office, Washington, DC 20402. The subscription rate for DODISS Parts I and II is \$40.00 per year (\$10.00 additional for foreign mailing). The subscription rate for DODISS, Part III, is \$20.00 per year (\$5.00 additional for foreign mailing). Each subscription includes both the basic index (published annually) and the cumulative bimonthly supplements for those parts under subscription. Subscription is available on a yearly basis.

2.11 DODISS Notice: NPFC publishes and distributes a weekly publication, the "DODISS Notice", containing advance information, about selected new and revised military and Federal standardization documents. NPFC distributes one "DODISS Notice" to an address regardless of the number of different Area Assignment/FSC's subscribed to.

3. ORDERING NAVFAC GUIDE SPECIFICATIONS FROM PWC YOKOSUKA:

3.1 Upon award of an A-E Contract, the A-E should review the list of NAVFAC Guide Specifications in MILITARY BULLETIN P-34, checking only those documents which will be needed to prepare the Specification, and return a listing to the PDE.

3.1.1 Hard copies: PDE will obtain hard copies for the A-E.

3.1.2 Diskettes: NAVFAC Guide Specifications may be copied on diskettes from PWC YOKOSUKA's Wang system. A-E's shall provide their own diskettes and Wang Operator. Arrangements shall be coordinated with Code 171, telephone (0468) 26-1911 ext SO72 or Code 172.5, telephone (0468) 26-1911 ext 5075.

4. PROCEDURES FOR OBTAINING DESIGN MANUALS, P-PUBLICATIONS, AND MILITARY/FEDERAL AND NAVFAC GUIDE SPECIFICATIONS:

4.1 NAVFACENGCOM has implemented a CD Rom based data retrieval system which includes all NAVFAC Guide Specification with necessary local modifications to include Japanese Industrial Standards. This system also includes all NAVFAC Design Manuals and other related U.S. Government specifications and design criteria. We strongly recommend that all A-E's subscribe to this service. The PDE can arrange a demonstration of the system and provide information necessary to order it should your firm wish to purchase same.

4.2 Design Manuals are also available in hard copy from PACNAVFACENGCOM on a loan basis.

4.3 Commercial organizations may procure Design Manuals and P-Publications from:

Superintendent of Documents  
U. S. Government Printing Office  
Washington. DC 20402

4.4 Military/Federal and NAVFAC Guide Specifications are available to all parties, free of charge, from:

Commanding Officer  
Naval Publications and Forms Center  
5801 Tabor Avenue  
Philadelphia, PA 19120  
Telephone: Autovon (DOD only): 442-3321  
Commercial: (215) 697-3321

5. GENERAL SERVICES ADMINISTRATION OFFICES: Copies of Federal Specification and Standards may be obtained from the nearest General Services Administration regional office listed below. These documents are also available from the Naval Publications and Forms Center.

<u>REGION</u>	<u>ADDRESS</u>	<u>SERVICE AREA</u>
1	John M. McCormick Post Office and Courthouse Boston, MA 02203	Connecticut, Maine, Vermont, New Hampshire, Massachusetts, and Rhode Island
2	26 Federal Plaza New York, NY 10007	New Jersey, New York, Puerto Rico, and Virgin Islands

- |     |  |  |
|-----|--|--|
| 3   | 7th and D Streets. SW<br>Washington, DC 20407                  | Maryland, Virginia,<br>West Virginia, and<br>District of Columbia  |
|     | 600 Arch Streets<br>Philadelphia. PA 19106                     | Pennsylvania and Delaware  |
| 4   | 1776 Peachtree Street. NW<br>Atlanta, GA 30309                 | Alabama, Florida,<br>Georgia, Kentucky<br>Mississippi, North<br>Carolina, South<br>Carolina, and Tennessee |
| 5   | 230 South Dearborn Street<br>Chicago. IL 60604                 | Illinois, Indiana,<br>Ohio, Michigan, Minnesota<br>and Wisconsin   |
| 6   | 1500 East Bannister Road<br>Kansas City. MO 64131              | Iowa, Kansas, Missouri,<br>and Nebraska  |
| 7   | 819 Taylor Street<br>Fort Worth, TX 76102                      | Arkansas, Louisiana,<br>Texas, New Mexico,<br>and Oklahoma   |
|     | 515 Rusk Street<br>FOB Courthouse<br>Houston, TX 77002         | Gulf Coast from<br>Brownsville, Texas to<br>New Orleans, Louisiana   |
| 8   | Building 41<br>Denver Federal Center<br>Denver, CO 80225       | Colorado, North Dakota,<br>Utah, South Dakota,<br>Montana, and Wyoming                                     |
| 9   | 525 Market Street<br>San Francisco. CA 94105                   | Northern California,<br>Hawaii, and Nevada.<br>except Clark County   |
|     | 300 North Los Angeles Street<br>Los Angeles, CA 90012          | Los Angeles, Southern<br>California, Clark<br>County, Nevada, and<br>Arizona                               |
| 1 0 | 915 Second Avenue<br>440 Federal Building<br>Seattle. WA 98174 | Alaska, Idaho, Oregon<br>Washington  |

\*\*\* END OF SECTION \*\*\*

## SECTION 3

### ELEMENTS OF SPECIFICATION COMPOSITION

There are a number of pitfalls which must be avoided if contract specifications are to be easily understood, readily interpreted, and have a firm legal basis. Some of the most common errors found in reviewing specifications at the 100% stage follow.

#### 2. CONFLICTS BETWEEN SPECIFICATIONS AND DRAWINGS:

2.1 The contract clause titled "Specifications and Drawings FAR Construction (FAR 236-21 APR 84)" states, in part: "Anything mentioned in the specifications, and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In case of discrepancy in figures, in the drawings, or in the specifications, the matter shall be promptly submitted to the Contracting Officer, who shall promptly make a determination in writing."

2.2 Thoroughly and completely coordinate drawings and specifications. The majority of claims made against the Government result from inconsistencies or ambiguities between project Specifications and drawings, and in some cases inconsistencies within each document. Drawings shall conform to the requirements of MIL-HDBK-1006/1 and, in general, shall show:

- a. Location of project on the site.
- b. Architectural and engineering design.
- c. The plans, elevations; details, and all essential dimensions.
- d. Designation of each portion by title or symbol, to allow reference to it.
- e. The extent of the various materials by symbols or otherwise.
- f. Notes giving the basic design data, assumed loads, allowable stresses.
- g. Limits of work.
- h. Equipment schedules.
- i. Generic names of equipment and materials.

#### 2.3 Specifications shall give all necessary information governing:

- a. Supplementary contractual requirements.
- b. Detailed information not supplied by the drawings..
- c. Materials and workmanship.
- d. Installation requirements.
- e. Inspection and tests.
- f. Quality control for workmanship, and material.

2.4 Terminology used in specifications and drawings shall be the same.. The drawings and specifications should complement each other. They should interlock. but not overlap.

2.5 Cross-Reference to Drawings: Cross-references (references to parts covered within the specification) should be held to a minimum. Cross-reference only to clarify the relationship between the requirements within the specification and to avoid inconsistencies. Avoid repetition. Requirements should be stated once, fully and precisely. Do not cross-reference or repeat for emphasis, because when corrections become necessary and are changed in one place they may be missed in the other. The specification is intended to complement but not to reiterate the drawings. For example, where the drawings show studs are to be two by four inches spaced 16 inches on centers, the specifications should state whether they are to be Southern Pine or Douglas Fir. The drawings allocate the material; the specification states the quality and the methods under which it is to be employed.

Avoid phrases such as:

- a. as shown
- b. as indicated
- c. as detailed

These are redundant because the provision of items shown on the drawings are already a part of the contract. Also, if one of these phrases-is used for an item and it is not indicated, shown, or detailed on the drawings, the Contractor, by law, is not obligated to provide the item. If used, such as in the Painting Section, the preferred phrase is "as indicated."

2.5.1 Do not supplement or repeat in the technical provision any of the contract clauses in the contract. If cross-referencing is required within the specification, never refer to another paragraph by its number--use the section number and title.

Example:

...Section 06200, "Finish Carpentry."  
...Paragraph "Inspection."

3. PREVIOUSLY PREPARED CONTRACT SPECIFICATIONS: A void using previously prepared contract specifications-or obsolete guides. This nullifies the advantage of currently furnished guides containing new criteria and approved phrasing; or other pertinent information.

4. TABLE OF CONTENTS PAGE: List each section by exact title in CSI 16 division order.. Page numbers need not be included for construction contracts.

5. SCOPE PARAGRAPHS: Exclude scope paragraphs at the beginning of each section. Also exclude a listing of related subjects and where they are located.

6. EXCESSIVE PARAGRAPHING: Do not "overparagraph." Keep the number of levels of subparagraphs to a bare minimum. Avoid the use of very broad categories. The most abused paragraph title is "Requirements." This automatically adds another decimal point to all paragraphs which follow and it serves no purpose since everything in a specification can be classified as a "requirement." Unfortunately this title is used occasionally in "TS" specifications, but will be eliminated by future revisions..

7. CHARACTERISTICS OF A GOOD SPECIFICATION:

- a. All materials noted on the drawings can be found Clearly and concisely specified under the same terminology in the specification.
- b. Edit out references to materials, supplies. equipment, or methods unrelated to the job.
- c. Fit the specification to the magnitude of the job. For instance, a yard of concrete need not be specified by 15 pages of data while ,a \$15,000 hoist is specified by a passing reference to an industry standard.

Exercise care-when using a reference so-that the requirements are properly "tailored." Tailoring is the process by which the individual requirements (sections, paragraphs, or sentences) of the selected specifications and standards are evaluated to assure that each tailored document invoked, states only the minimum needs of the Government: Specifiers tend to reference standards and specifications in their entirety without conducting a detailed technical review of the total content of the referenced documents. Do not use nonessential documents. For example, each standardization document referenced in a specification might in turn reference 20 or so other standardization documents; This means that by referencing 50 of these documents in a project, it would typically require compliance with 1,000 second tier documents, plus 20,000 third tier documents. Reference specifications listed under APPLICABLE PUBLICATIONS must be used in the body of the specification and vice versa.

8. CLARITY AND PHRASING: The responsibilities of the Contractor shall be carefully defined and precisely expressed. C o n t r a c t specifications must be clearly and concisely worded. and state exactly what will be required from the Contractor in every case. Phrasing which is not clear, tends to cause the bidders to include a contingency increment in their bid prices.

8.1 Objectionable Phrases: Do not use vague words, phrases, and other similar expressions. They add nothing, are not enforceable and confuse the issue in case of claims. If specific procedures or devices are required, state in positive terms and, wherever possible state exactly where these procedures or devices are to be used rather than using phrasing such as "when required." While it may not always be possible to do this, every effort should be made to cover every contingency and eliminate all unknown quantities in a specification. Phrases such as those listed below shall not be used in a specification unless they are defined, quantified, or completed to eliminate any doubt as to intent.

- a. Poles shall be straight and true
- b. Workmanship shall be of the highest quality
- c. Workmanship shall be of the highest grade
- d. Accurate workmanship
- e. Securely mounted
- f. Installed in a neat and workmanlike manner
- g. Skillfully fitted
- h. Properly connected
- i. Properly assembled
- j. Good working order
- k. Good materials
- l. In accordance with applicable published specifications
- m. Products of a recognized reputable manufacturer
- n. Tests will be made unless waived
- o. Carefully performed
- p. Neatly finished
- q. Metal parts shall be cleaned before painting
- r. Smooth surfaces
- s. Pleasing lines
- t. Of an approved
- u. Of standard type
- v. Highest quality
- w. Every
- x. Herein, hereby, same, said

8.2 Do not try to place the responsibility upon the Contractor or OICC/ROICC personnel for the possible inaccuracy of or the lack of information on the part of the government; e.g., never use sentences similar to: "Although the drawings indicate approximately the conditions that are likely to be found, bidders should satisfy themselves as to the actual conditions, for while they are believed to be as shown, the government does not guarantee the accuracy of the information given, and the bidder shall assume all responsibility in the use of such." Remember that the government is responsible for the accuracy and sufficiency of the information it gives.

8.3 Use the active voice (imperative mood) wherever possible to convey clear and concise meaning.



Do not say: "The equipment shall be removed and replaced as indicated."

Say: "Remove equipment during the alteration and reinstall it after completion."

Do not say: "The existing culverts shall be replaced as indicated on the drawings."

Say: "Remove existing culverts and reinstall in the new locations."

8.4 Provide, Furnish, and Install: "Provide" is defined in the Contract Clause entitled "Specifications and Drawings for Construction (FAR 52.236-21) as "furnish and install." When material and/or equipment are only to be furnished by the Contractor, the term "furnish" should be used, and when material and/or equipment are only to be installed by the Contractor the term "install" should be used; however, the Contractor may be required to "provide" foundations, fastenings, etc., for the installation. If the word "install" is used alone, the bidder or Contractor has a right to assume, on the basis of the definition cited, that the government will "furnish" the subject material.

#### 8.5 Use articles.

Do not say; "The Contractor shall paint ceilings of office."

Say: "Paint the ceiling of the office."

8.6 To standardize phrasing in project specifications. materials shall "conform to" a referenced specification. and workmanship shall be "in accordance with" a specification.

8.7 Use "Contracting Officer" in lieu of "Officer in Charge of Construction" (OICC) and "Resident Officer in Charge of Construction" (ROICC).

9. SENTENCE CONSTRUCTION: Use the U.S. Government-Printing Office Style Manual as the guide to capitalization, spelling, punctuation, and syllabification.

9.1 Clarity and Punctuation: Use short, concise sentences in the simplest style possible. Punctuation should aid in reading and prevent misreading. Well planned word order requires a minimum of punctuation. When extensive punctuation is necessary for clarity, the sentence(s) should be rewritten. Sentences with compound clauses should be converted into short and concise separate sentences.

9.2 Imperative Mood: Either the imperative mood or the indicative mood (passive voice) is suitable for use in the development of specifications. The imperative mood is preferred (e.g., "spread adhesive with a notched trowel") and should be used for instructions covering installation of products or equipment. The indicative mood, passive voice (e.g., "adhesive shall be spread?") denotes a provision that is binding, but usually requires more words than the imperative. NAVFAC Guide Specifications will be converted to the imperative mood as they are updated under the Criteria Program.

9.2.1 Use the imperative mood where it results in the use of fewer words and does not reduce the clarity of technical and contractual intent.

Example:

Instead of: "Installation of screw-jointed and solder-jointed tubing: All pipe and tubing shall be cut accurately to measurements established by the Contractor without springing or forcing."

Say: "Installation of screw-jointed piping and solder-jointed tubing: Cut piping and tubing accurately to required measurements and work into place without springing or forcing."

9.3 Simplification: Together with clarity, completeness, and precision, brevity is an important consideration in writing specifications. The most-concise way of writing the specification should be sought. Brevity is often the best way of ensuring clarity. In achieving brevity, however, the writer must ensure that none of the technical and legal intent is lost. The following specific rules should be followed whenever they do not change the intent and meaning or impair the clarity of the guide specification.

- a. Redundant and Superfluous Wording: Eliminate redundant and superfluous wording such as "conforming to," "all," and "type."

Example:

Instead of: "Aluminum paint conforming to Fed. Spec. TT-P-38."

Say: "Aluminum paint: Fed. Spec. TT-P-38."

Instead of: "Fluorescent type fixtures shall be designed to operate at ..."

Say: "Design fluorescent fixtures to operate at  
..."

- b. Repetition: Reduce repetition of the subject by combining sentences. but avoid compound complex Sentences and Stilted phrasing.
  - c. Tabulation: Tabulate requirements instead of writing a long paragraph stating requirements.
  - d. Description of Requirements: Do not repeat the description of requirements which are described adequately in references incorporated in the specification. (Exception: Where the inclusion of a very brief requirement in the specification will eliminate a reference from the specification. thereby avoiding a requirement for government and Contractor field personnel to obtain a large reference for one small item, do so.) In addition to eliminating unnecessary verbiage from the specification, application of this rule will avoid conflicts between the specification and latest version of the reference Used.
  - e. Basic Designation of Reference: After the initial listing of references. do not repeat the title and current issue identification of the reference in the remainder of the specification. Include the reference by basic designation only; e.g., ASTM A 36, not ASTM A 36-82.
10. AVOID USE OF THE FOLLOWING:
- a. Unfamiliar words, colloquial terms, jargon, and shipboard terms. For example, do not use "bulkhead" for wall. "deck" for floor. or "head" for toilet. Where unusual technical and trade expressions must be incorporated due to the nature of the product or service, it is frequently desirable to define these expressions in the specification. In short, technical knowledge will be of little value unless the specifier clearly communicates the specifier's needs in the specification. Remember, the specification will also be used by nontechnical personnel.
  - b. Abbreviations and acronyms. Exceptions: Use abbreviations for Units such as psi, cfm, and kw and be consistent in their use. If necessary, use only standard, well understood abbreviations which are in common usage and not subject to misinterpretation in the specification. Spell out the full meaning of the abbreviation or acronym the first time it is used in each specification section, followed by the abbreviation in parentheses: thereafter use only the abbreviation (e.g., state "pounds per square inch (psi)" then state "The is psi.") For metric abbreviations, use the American National Metric Council

(ANMC) Editorial Guide. This does not apply to commonly-used abbreviations in tables and equations.

- c. Footnotes to convey additional information.
- d. Symbols. Never use ' for foot, " for inch, ° for degree, % for percent. ± for plus or minus, or # for pound. Spell these terms out.
- e. Exponents, subscripts, or superscripts. Spell out each term.
- f. Open-ended requirements such as "as may be required," "as necessary," "an approved type," "as directed," "as approved," "subject to approval," and "satisfactory to the Contracting Officer." Since the Contractor cannot predict in advance what will be satisfactory or approved, he must assume the risk that after the contract has been signed he can convince the Contracting Officer that what he proposes is acceptable. From the Contractor's viewpoint, risk translates to money, so he is going to raise his price to cover that risk.

In this case, the Contractor must base his bid on 100% coring. If you don't know the depths, geologic structure, or can't otherwise define what core samples are required, estimate the percentage of the hole length for which cores will be required. For example:

"Provide core samples of 60% of the depth of the hole."

- g. Long, hyphenated terms, and words such as "hereinbefore" and "hereinafter."
- h. Common phrases such as "at no expense to the Government," "at the expense of the Contractor," "independent laboratory," "tests and inspections shall be conducted in the presence of the Contracting Officer," and "Contracting Officer reserves the right." These and similar phrases should not be used because technical sections specify Contractor requirements only. Technical sections are not to be used to instruct the Contracting officer, or to emphasize particular Division I and Contract Clause requirements.. If a laboratory is approved by the Government, which means by the National Bureau of Standards or the Contracting Officer, it generally will be independent, but approved--always. Do not repeat Division I and Contract Clauses requirements.
- i. The pronouns "he," "his," "this," "they," "their," "who," "it," and "which." Pronouns should be used sparingly if at all. It is better to repeat the noun.

- j. Underlining any portion of a paragraph or capitalizing phrases or words for the Sake of the emphasis. All of the requirements are important in obtaining the desired product or service.
- k. Trade names, copyrighted names and other proprietary names applying exclusively to the product of one company. unless the item(s) cannot be described adequately because of technical involvement, construction, or composition. In such instances. at least three (more, if possible) commercial products may be included with the phrase "or equal" following to assure that bidding will not be limited to the particular make Specified. The same philosophy applies to manufacturers' part numbers or drawing numbers for minor parts when it is impractical to specify the exact requirements in the specification. To the extent that it is practical, the particular characteristics required should be included to define the "or equal" basis. Trade names present a problem when they have become generic terms. For instance, the word "microswitch" is frequently used to refer to any sensitive or snap-action switch, but "Microswitch" is a brand name. Some manufacturers jealously guard their trade names. Bussmann, for instance. uses the registered name "Fusetron" for time-delayfuses. and they don't want "Fusetron" to become a generic term. When such a registered trade name is misused, the manufacturer can lose his exclusive rights to the name, causing him considerable harm. Even brand names which have become generic should be avoided in writing a specification, since they cannot convey clearly to the Contractor or Inspector what is required. To maintain clarity and avoid potential mishaps, proprietary names should always be used correctly. and only when absolutely necessary.
- 1. Dimensions or locations in the specification: this information belongs on the drawings.
- m. The term "and/or" in specifications. The effectiveness of the specification depends on precise language used to convey concepts in an unambiguous manner;. "And" is used to indicate additive requirements such as, "The Contractor shall supply one set of prints and the original. negatives." "Or" is used to indicate an alternative such as. "Data may be supplied on magnetic tape or standard punch cards." The term "and/or" is not recognized by the English language nor contract law. Like most terms of this type. "and/or" is conveniently misunderstood and results in numerous claims.

11. MISCELLANEOUS DIRECTIVES:

- a. Spell out figures under 10, except units of time, measurement, and money and use numerals for figures 10 and above. "One" or "zero" should always be spelled out when used singly. Never use both words and numerals: e.g., "ten (10)" are required.
- b. Indicate amendments to Federal and Military Specifications in the first paragraph by placing the required notation (e.g., "Am 0001") under the basic Specification designation.
- c. When referred to in the text, Federal and Military Specifications shall have "Fed. Spec." and "Mil. Spec.," respectively, placed before the publication identifier for clarity (i.e., Fed. Spec. WW-P-000, Mil. Spec. MIL-A-0000). Other publications, such as those of industry, ASTM and NEMA, that do not require more clarification shall be identified in the text only by their publication identifier (i.e., ASTM 36).
- d. The proper spelling for the word "Contractor" in guide Specifications is with a capital "C." "Government" shall be spelled with a capital "G."
- e. All classification terms, e.g., Type, Grade, or Class, shall appear with the first letter of the term capitalized.
- f. In instances where three or more items or subjects are listed in series, place commas after each item or subject, including the one immediately ahead of the conjunction.
- g. When a statement of limitation is written out, the phrase shall be stated. "The diameter shall be not greater than" to express maximum limit, or "The diameter shall be not less than" for stating a minimum limit.
- h. "Unless otherwise specified" shall be used to indicate a default requirement.
- i. Use "shall" whenever expressing a binding provision. However, "indicative mood" is preferred. Passive voice should be limited in use. Refer to Paragraph No. 9.2. The following statements correctly employ "shall":

"Power Connector. The input power cable shall be supplied with ..."

"Data Format. The Contractor shall furnish magnetic tape ..."

There can be no question of the need to furnish or perform when "shall" is used.

- j. Use "should" and "may" whenever it is necessary to express nonmandatory provisions. This is seldom necessary in a well written specification.

"The connector should have polarized blades."

The statement above really indicates a preference for a power plug with polarized blades. "Should" and "may" are used to express an option and are frequently abused. For example:

"The data Should be furnished on magnetic tape but may be provided on 80-column punch cards."

This statement does not preclude the Contractor from furnishing magnetic disc. If what is meant is that tape is preferred, but Cards acceptable, it should be stated this way:

"The data shall be furnished on either magnetic tape or 80-column punch cards; however, magnetic tape is preferred."

- k. "Will" shall be used to express a declaration of purpose on behalf of the Government. "Will" shall also be used in cases where it is necessary to express simple futurity. i.e., "negatives will be supplied by the Government."
- l. Use the terms "flammable," and "nonflammable" in lieu of "the terms "inflammable," "uninflammable," and "noninflammable."
- m. Whenever possible, use decimals instead of fractions.

12. CONSTRUCTION CONTRACT NUMBER: The Construction Contract number and its related Specification number must be used on the specification documents. The A-E contract number is never used on a construction contract. Check with the PDE.

13. FACTORY TESTING: Do not ask for Unreasonable or meaningless tests, reports, or certifications but rely to the maximum extent on the manufacturer's normally available quality control data. Do not call for factory certified tests or factory witnessed tests for minor items or for off-the-shelf types of materials or equipment. Often the expense involved in testing is considerable and cannot be justified. The Government will emphasize quality assurance testing and the Contractor shall provide quality control type testing. (See Section 7. "Quality Control.")

14. USE OF GOVERNMENT TESTING FACILITIES: Specifications shall be prepared to place the responsibility for field and laboratory testing on the Contractor for CQC type Contracts and on the Contractor and the government for nonCQC type contracts. The

government will emphasize quality assurance testing and the Contractor shall provide quality control type testing. (See Section 7. "Quality Control" for detailed instructions.)

15. COORDINATION WITH MECHANICAL OR ELECTRICAL TRADES: On many construction projects, difficulty arises in identifying responsibility for furnishing, installing, and checking out motors and controls for electrically-operated mechanical equipment. Decided advantages to the government; the bidders, and the prime and subcontractors will result from properly identifying the work to be done by the electrical subcontractor. With careful choice of words, this can be done without violating the rule that the government has only one contractual relationship - with "the Contractor." It is expected that "Mechanical" subcontractors will request an estimate of cost from the electrical subcontractor for the accomplishment of the electrical phases of the work specified under the various "Mechanical" sections of the Specifications, but will retain responsibility for their suitability. With these factors in mind, paragraphs should be developed for each project, particularly in the plumbing, heating, air conditioning, ventilation, other mechanical and electrical sections to define these areas of responsibility. Following is a sample paragraph which provides the type of coordination envisioned: "Electrical components of mechanical equipment and systems such as motors, starters, and controls shall be provided under this Division and shall be as specified herein and as necessary for complete and operable systems. Extended voltage range motors will not be permitted. Interconnecting wiring for components of packaged equipment shall be provided as an integral part of the equipment. All interconnecting power wiring and conduit for field erected equipment and all control wiring and conduit shall be as specified in Division 16. Motor control equipment forming part of motor control centers or switchgear assemblies and all necessary conduit and wiring connecting such assemblies, centers, or other power sources to mechanical equipment shall conform to Division 16."

\*\*\* END OF SECTION \*\*\*



## SECTION 4

### FORMAT AND TYPING OF SPECIFICATIONS

1. GENERAL: The practices described herein are in use at the present and should be followed for all submissions. The typist who will be typing the specifications should be briefed thoroughly on the requirements of this Section.

NAVFAC GUIDE SPECIFICATION (NFGS) FORMAT: The NFGS Format is a modified version of the Construction Specification Institute (CSI) Format. It is a concept of divisions and sections, where a project specification is organized into 16 divisions, with each division subdivided into related sections.

2.1 Divisions: The 16 divisions are the permanent framework of the NFGS format. They are fixed in number and name, and serve as broad classifications of the various segments of work. The division listing follows:

- DIVISION 0 - Bidding
- DIVISION 1 - General Requirements
- DIVISION 2 - Site Work
- DIVISION 3 - Concrete
- DIVISION 4 - Masonry
- DIVISION 5 - Metals
- DIVISION 6 - Wood and Plastics
- DIVISION 7 - Thermal and Moisture Protection
- DIVISION 8 - Doors and Windows
- DIVISION 9 - Finishes
- DIVISION 10 - Specialities
- DIVISION 11 - Equipment
- DIVISION 12 - Furnishings
- DIVISION 13 - Special Construction
- DIVISION 14 - Conveying Systems
- DIVISION 15 - Mechanical
- DIVISION 16 - Electrical

#### 2.2 Sections:

2.2.1 The concept of grouping related sections into divisions was conceived as a practical means of providing uniformity without disrupting current practices in specification composition; this means that specifications are prepared as previously with the exception that each section is placed under a specific division. Grouping of related work into divisions assures a helpful degree of uniformity from project to project. It also allows specifiers to develop and reproduce sections and assign numbers to them immediately without fear that they will lose their physical grouping. Additionally, sections can be deleted or added without radically upsetting the physical sequence and numbering system. A

complete listing of sections is too voluminous to present in this document but may be found in the Construction Specifications Institute (CSI) document MP-2-1, Masterformat-Master List of Section Titles and Numbers; a partial compatible list of sections may be found in NAVFAC P-34 under the listing for NAVFAC Guide Specifications (NFGS) Series (Formerly "TS" Series).

2.2.2 Numbering: A five-digit numbering system is used. The first two digits indicate the particular division, and the last three digits indicate a pre-designated unit of work. Occasionally, due to overcrowding of sections, a decimal number is added to the five-digit number to indicate a further breakdown (e.g., 16910.1). This decimal number is not usually carried forward to the project Specification. (If section 16910 is not used, delete the decimal number).

3. ARRANGEMENT OF TECHNICAL SECTIONS - THREE-PART FORMAT: A section is divided into three basic parts, "General," "Products," and "Execution". Develop additional paragraphs for each part to meet project requirements. List these paragraphs with their appropriate titles in logical sequence.

3.1 Exceptions to Three-Part Format: The following exceptions apply:

- a. For those sections that provide options for either factory or field fabrication of components and systems, Part 1 would be General and Part 2 would combine Products and Execution. Examples of this might be sections covering miscellaneous metal, or mechanical work such as refrigeration equipment.
- b. For those sections that do not involve any work on the site by the Contractor. Part 1 would be General and Part 2, Products. Examples of this could be a section such as Free Standing Space Dividers; a section covering any work which is only furnished by the Contractor but installed by the owner; or a section which refers to some other section for installation.
- c. For those sections that involve labor only, Part 1 would be General, Part 2, Execution. Examples could be sections on clearing and grubbing or stripping of topsoil.
- d. For those sections that involve only general paragraphs under Part 1 - General, the section shall end with the heading "Part 2 and Part 3: (Not Used),"

3.2 Part 1 - General: Covers those general areas of concern which relate to the work and which define the general administrative and technical requirements specific to a particular section. Included in General would be Applicable Publications, Definitions,

Quality Assurance, Submittals. Delivery and storage. Job Conditions, Warranties, and Experience Clauses. Related work shall not be included in Part 1 (see paragraph 3.2.3).

3.2.1 Applicable Publications: The first paragraph in any specification should be a standard paragraph listing the publications referenced. The listing shall include the name of the issuing organization, number, title, and current issue identification. "APPLICABLE PUBLICATIONS: 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."

3.2.2 Definitions: Words and terms used in the section that may be ambiguous or that may have regional variation in meaning should be defined. In order to avoid differences of opinion and duplication, the definitions in other sections should be checked. The definition paragraph should immediately follow the applicable publications paragraph of the guide specification.

3.2.3. Related Work: When related work in other sections is involved in any specification section, it is to be referenced by inclusion in the appropriate place or places in the text, and not placed in one inclusive paragraph at the beginning of the section. If there is electrical work in a section, there should be a cross-reference in the text to the appropriate section specifying the work, for example: Section 16011, "General Requirements, Electrical."

3.2.4 Quality Assurance: Covers prerequisites, standards, limitations, and criteria which establish a level of quality for products and workmanship under this section. Applicators'/Manufacturers' Qualifications. Experience clauses must be approved by a Level I Contracting Officer prior to use. Welders' qualifications and similar qualifications may be included.

3.2.5 Qualifications: Include statements of qualifications for designers, manufacturers, fabricators, welders, installers, and applicators of products and completed work. Include qualifications of a testing agency only when qualifications over and above those called for in Sections 01400 or 01401 are required.

3.2.6 Regulatory Requirements: Compliance with specific code requirements for Contractor designed items such as wood trusses, labeling such as Underwriters Laboratory Inc., and requirements of public authorities such as state highway departments,

3.2.7 Design Criteria: Include only where the manufacturer/supplier is responsible for design of a structure or system such as prefabricated metal buildings, curtain wall construction, or environmental chambers.

3.2.8 Job Mock-up: Establishes standards by which the work Will be judged. Full-size fabrication of sample construction for comparison and evaluation of actual work.

3.2.9 Submittals: Details and instructions concerning data to be furnished by the Contractor before, during, and after construction which pertain to the work of a particular section should be included under this heading. Include items such as:

- a. Samples. Examples illustrating finishes, coatings, Or finish materials. List quantity and size of each sample required. The use of samples should be limited to items that cannot be evaluated and approved by some other method. Samples are expensive and must be stored until the project is completed. Allow full-size samples to be tagged and installed in the project after approval where feasible.
- b. Shop Drawings. Specify what information is required on the shop drawings. Use only when detailed technical drawings specifically prepared for the project are necessary.
- c. Manufacturers' Data. Use in lieu of shop drawings where Standard catalog cuts, manufacturers' specifications, or other standard published data are sufficient.
- d. Certified Test Reports. List the certified test reports required so the Contractor can quickly determine what reports he must provide. Test reports are for current tests (up to three years old) of samples of the materials delivered. If current tests are not required, omit the paragraph. Determination of reports required may be facilitated by review of Sections 01400 or 01401 paragraphs on Certified Test Reports. Blanket requirements for all tests required in the referenced publications are to be eliminated.
- e. Manufacturers' Certificates of Conformance or Compliance. List the different materials or equipment for which certificates are required. A Certificate of Conformance is based on prior tests of material Similar to that being delivered. If a certified test report is required on a material, then that material would not be included under this paragraph. Do not require certificates to be notarized. Determination of reports required may be facilitated by review of Sections 01400 or 01401 and paragraphs on Certificates of Conformance or Compliance. Blanket requirements for all certificates required in the referenced publications are to be eliminated.
- f. Operation and Maintenance Data. Normally, the specifying section should require Operation and maintenance (O&M) manuals for each system and for each component, as

applicable. For mechanical equipment the manual requirement appears in NFGS 15011, "Mechanical General Requirements"; for electrical equipment the requirement appears in 16011, "General Requirements, Electrical"; and for medical equipment the requirement appears in 11700, "General Requirements for Medical Equipment." In addition to coverage of operation and maintenance, the manuals should include appropriate provisions for training, safety, and emergency procedures. Specify the number of copies of the manual required.

- g. Maintenance materials (Extra Stock). Use when it is essential to obtain an extra stock of materials that will match patterns, finishes, or colors that go out of stock frequently (e.g., floor tile, acoustical tile).

3.2.10 Delivery and Storage: Establish the conditions under which products, materials, and components will be accepted and protected at the construction site.

3.2.11 Job Conditions: Establish the limitations, criteria, and coordination relating to the physical and environmental conditions under which the Contractor must perform as they pertain to a particular section. Titles such as the following are included here: Existing Conditions. Environmental Protection Requirements. and Sequencing or Scheduling.

3.2.12 Pre-Installation Conference: Can be included in this section to specify conferences for coordinating materials and techniques, and to sequence related work for sensitive and complex items, e.g., roofing or integrated systems.

3.3 Part 2 - Products: Defines, in detail, the acceptable equipment, materials, fixtures, mixes, and fabrications, i.e... "products" to be incorporated into the work. Source quality control may be included here. Specify materials, equipment, and methods that will provide construction with a maximum of overall economy consistent with functional and aesthetic requirements, reasonable comfort, and sound architectural and engineering practice. Materials, equipment, and methods will be utilized that will result in the lowest practicable cost, with due consideration to economical maintenance for the required use for the life expectancy of the facility. Wherever possible, materials, equipment, and methods specified will be those used in the Civilian construction industry that have met or are capable of meeting this objective.

3.3.1 Materials/Equipment: Describe in detail the requirements for materials and accessories related to the work within the section, and include acceptable material options that the Contractor may use. The fact that a material is comparatively new should not necessarily bar its use provided that it is not proprietary. Neither should a material's previous use place it in an "approved"

category. Usually it is necessary to base judgments upon laboratory tests. Such tests, in order to be accepted as authoritative, should be made by approved laboratories.

3.3.2 Mixes: Describe proportions or procedures in mixing materials. Mixing is considered a process preparing the materials for use. Examples of paragraph titles are: Asphalt Mix, Concrete Mix, Mortar Mix, Plaster Mix, or Terrazzo Mix.

3.3.3 Fabrication and Manufacture: Describe products which must be fabricated "off site" before they are ready for installation, as in the case of TS-03420, "Precast Prestressed Concrete."

#### 3.3.4 Source Quality Control:

3.3.4.1 Tests. Inspections: Tests and inspections of products required at the plant, mill, factory, or shop should be Specified here.

3.3.4.2 Performance Verification: State procedures and methods required for verifying performance or compliance with specified criteria.

3.4 Part 3 - Execution: This part describes the manner in which the products specified in Part 2 are to be incorporated into the project. The provisions included in this part are the "on site" or "field" functions and requirements. The groupings are arranged, in a chronological sequence as might occur in the orderly progression of the work. Included in Execution would be Inspection, Preparation, Installation/Application/ Performance/Erection, Field Quality Control, Adjustment and Cleaning, Protection, Instructions for Operating Personnel and Schedules.

3.4.1 Inspection: Acceptable workmanship in many sections of a construction project is dependent upon previous work of other trades accomplished under the provisions of other specification sections. Under this condition, it is essential that the Contractor insure that no defects or errors are present in completed phases of the work which would result in poor application or installation, or cause latent defects in the subsequent work to be accomplished.

3.4.2 Preparation: Describe those preliminary actions necessary to prepare for the accomplishment of the principal work of the section. The requirements can range from simple cleaning to elaborate technical efforts, such as grading, etching, or establishing grades and levels. Examples of some provisions which may be included are: field measurements, preparation of surfaces, and fine grading.

3.4.3 Installation/Application/Performance/Erection: Installation concerns requirements such as placing concrete, laying brick, or framing floors. Application concerns requirements such as

4.4.1 Tables: Tables are used when data can be presented more clearly or effectively in a tabular format than in lengthy word descriptions. Avoid elaborate or complicated tables. If there is insufficient space on the same page, place a table at the beginning of the succeeding page or, if extensive, on a separate page. Cross-reference each table in associated text when it is not adjacent to that text. Number tables with consecutive Roman numerals in the order in which they are referred to initially in the NFGS. Place the number and title above the table. When required, rotate tables 90 degrees on the page, i.e., the 11-inch height becomes the 11-inch width. Place footnotes to a table below the table. The footnotes may contain mandatory information that cannot be presented as data within a table. Number footnotes separately for each table. Where numerals will lead to ambiguity (for example, in connection with a chemical formula), superior letters, asterisks, daggers, and other symbols may be used.

4.4.1.1 Short Tables: Place short tables, particularly those that require editing for project requirements, as close as possible to the associated text, making sure that the entire table is contained on one page. Following is an example of a short table.

TABLE-1

TITLE OF TABLE

ITEM	COL-1	COL-2	COL-3	COL-4	COL-5	COL-6
Xxxxxxxxxx	1234	5678	1254	6854	8562	4563
Yyyyyyyy	9564	5695	1234	8456	4576	2667
Zzzzzzzzzz	3599	6648	5994	8469	5991	5476

(Footnotes as required)

4.4.1.2 Long Tables: Include in the text appropriate cross-references to the tables. The format for long tables should be similar to the above. Long tables may be located at the end of the text for the particular section.

4.4.2 Forms: Generally, forms shall not be included in a contract specification. If one must be inserted, print the word "SAMPLE" in large letters diagonally across the face of the form. One exception to this rule is permissible (illustrated in NFGS-01400-01401). Here, submittal status log, testing plan, and non-compliance forms shall be included in the project specifications.

4.5 Page Size: Shall be 8 1/2 inches x 11 inches, and shall be on heavy weight, white bond. Plain white machine printout bond paper may be used, provided the net typing field is 8 1/2 inches x 11 inches.

#### 4. PAGE GUIDANCE:

4.1 Paragraph Numbering: Limit the levels of paragraphing to no more than four (see paragraph titled "Paragraph Number System") to the maximum extent possible. This presents the information in a form which is simple, easy to read, and considerably less confusing than when a document is written with a higher number of levels.

4.2 Paragraph Number System: The numbering system used in NFGSs is a modification of the CSI paragraph numbering system. It was developed to facilitate use of the WANG equipment to number or renumber the paragraphs in an NFGS automatically. The system is described in detail in the "User Manual for the Guide Specification System (GSS)" published by FACSO. The system is as follows:

1	LEVEL 1, Major paragraph
1.1	LEVEL 2, Subparagraph
1.1.1	LEVEL 3, Sub-subparagraph
1.1.1.1	LEVEL 4, Sub-sub-subparagraph

4.2.1. Tabulation of Information Under Levels: Information under each level may be divided into tabulations for clarity. If used, tabulations shall be in the following format:

- a. First sub level
  - (1) Second sub level
    - (a) Third sub level

4.3. Paragraph Titles: Titles must be provided for main paragraphs and first tier subparagraphs. Main paragraph titles shall be in capital letters. Titles for subparagraphs shall have the first letter of main words capitalized. Paragraph titles and subparagraph titles shall not be underlined. When the first few words of the first sentence of a paragraph are the same as the title of the paragraph, the title may be used as the first part of the sentence. Avoid the use of such titles as "General," and use titles that describe the content of the paragraph.

Example:

PART 2 - EXECUTION

2.1 FACILITIES AND SERVICES:

2.1.1 Availability of Utilities Services:

4.4 Tables and Forms: Avoid tables and forms in specifications. Some tables and forms cannot be reproduced by the word processing system nor can they be transmitted by telecommunication. However, if one of these formats must be included in a specification, refer to DM 6.2 for guidance. Sketches, plates, drawings and figures shall not be included in project specifications.



4.4.1 Tables: Tables are used when data can be presented more clearly or effectively in a tabular format than in lengthy word descriptions. Avoid elaborate or complicated tables. If there is insufficient space on the same page, place a table at the beginning of the succeeding page or, if extensive, on a separate page. Cross-reference each table in associated text when it is not adjacent to that text. Number tables with consecutive Roman numerals in the order in which they are referred to initially in the NFGS. Place the number and title above the table. When required, rotate tables 90 degrees on the page, i.e., the 11-inch height becomes the 11-inch width. Place footnotes to a table below the table. The footnotes may contain mandatory information that cannot be presented as data within a table. Number footnotes separately for each table. Where numerals will lead to ambiguity (for example, in connection with a chemical formula), superior letters, asterisks, daggers, and other symbols may be used.

4.4.1.1 Short Tables: Place short tables, particularly those that require editing for project requirements, as close as possible to the associated text, making sure that the entire table is contained on one page. Following is an example of a short table.

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(Footnotes as required)

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4.5 Page Size: Shall be 8 1/2 inches x 11 inches, and shall be on heavy weight, white bond. Plain white machine printout bond paper may be used, provided the net typing field is 8 1/2 inches x 11 inches.

4.6 Printing: Suggest use "Prestige Elite, 12-Pitch" Font, WANG printwheel or comparable. Print shall be letter-quality. Printing shall be single spaced, with double space between paragraphs, and on one side of the paper.

4.7 Page Layout: Shall be the same as the sample attached hereto.

4.8 Margins:

- a. Top 1 inch
- b. Left Margin 1 1/4 inches
- c. Right Margin 1 inch
- d. Bottom Margin 3/4 inch  
(to page No.)

4.9 End of Section: At the end of each section, "\*\*\* END OF SECTION \*\*\*" shall be centered two lines below the last line of text.

4.10 Page Numbering: There will be two different page numbering styles in the specification as follows:

- a. Table of Contents and page numbering shall be lower case Roman. Start with "i" centered at the bottom of the first page under the specification number. The numbers below represent the unit identification code, followed by the fiscal year, then the construction specification number.

Example: 14-83-0000  
i

- b. Technical Review Submittal list shall be Arabic number. Start with "1" centered at the bottom of first page under the specification number.

(EXAMPLE)  
42-88-0345  
1

- c. Type specification, section; and page numbers in Arabic. Start with "1" centered at the bottom of the first page.

Example: 14-83-0000  
07510-1

4.11 Specification Numbers: Obtain the correct NAVFAC Specification Number from the PDE for all projects to be accomplished by Construction Contracts.

4.12 Typing Example: The example attached to this section shall be referred to as a guide.

\*\*\* END OF SECTION \*\*\*

1 inch

1 line

2 lines

PART 1 - GENERAL

1 line

SECTION 10152

HOSPITAL CUBICLE TRACK

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

1.1.1 American Society for Testing and Materials (ASTM) Publication:

B221-76a Aluminum-alloy Extruded Bars, Rods, Wire, Shapes, and Tubes

1.2 SUBMITTALS:

1.2.1 Manufacturer's Certificates of Conformance or Compliance: Submit certificates of conformance or compliance attesting that the materials and components meet the requirements specified.

1.2.2 Samples: Submit the following samples:

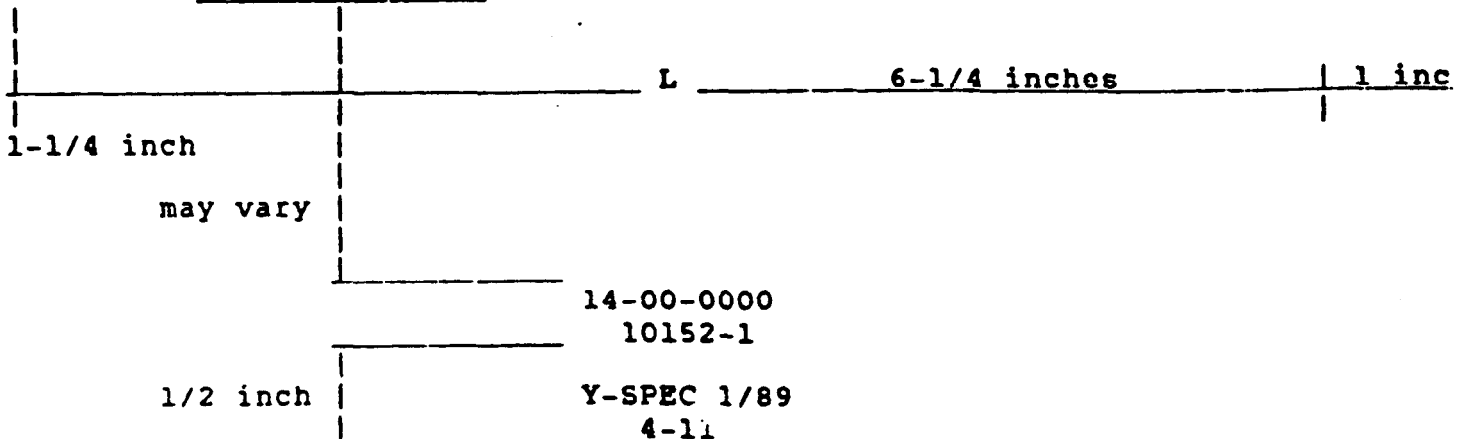
- a. Minimum 12-inch long piece of track
b. One carrier unit
c. One end stop and one pull-out

1.3 DELIVERY AND STORAGE: Deliver cubicle tracks to Site in unopened containers clearly labeled as to manufacturer's name and contents. Store in safe, dry, and clean location. Do not open containers until contents are needed for installation, unless verification inspection is required.

PART 2 - PRODUCTS

2.1 MATERIALS AND COMPONENTS:

2.1.1 Cubicle Track: Heavy duty type, ceiling mounted or hanger mounted.



(EXAMPLE)

1 inch

1 line

2 lines

SECTION 10152

HOSPITAL CUBICLE TRACK

PART 1 - GENERAL

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Publication:

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1.2.1 Manufacturer's Certificates of Conformance or Compliance: Submit certificates of conformance or compliance attesting that the materials and components meet the requirements specified.

1.2.2 Samples: Submit the following samples:

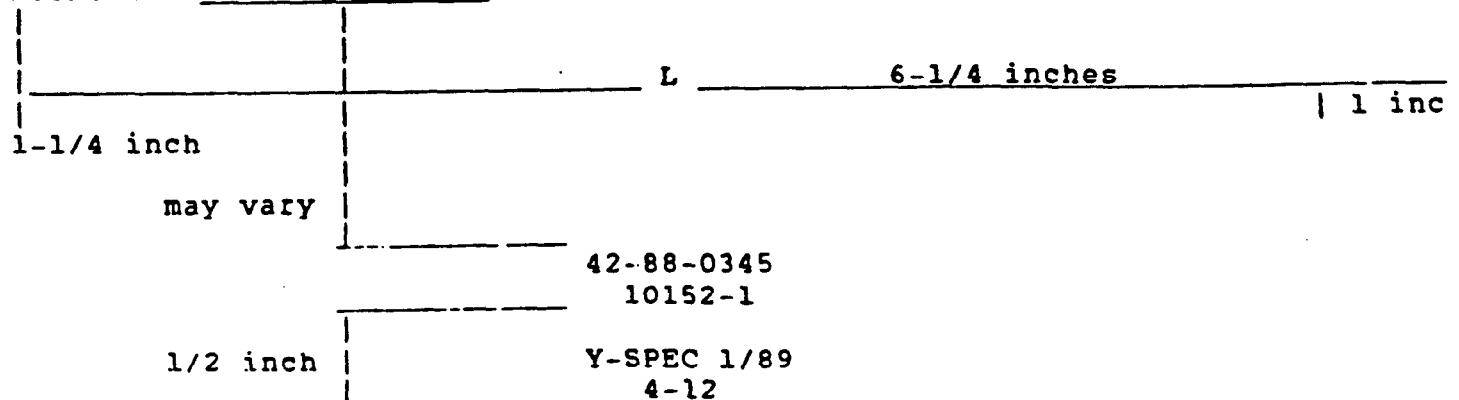
- a. Minimum 12-inch long piece of track
- b. One carrier unit
- c. One end stop and one pull-out

1.3 DELIVERY AND STORAGE: Deliver cubicle tracks to site in unopened containers clearly labeled as to manufacturer's name and contents. Store in safe, dry, and clean location. Do not open containers until contents are needed for installation, unless verification inspection is required.

PART 2 - PRODUCTS

2.1 MATERIALS AND COMPONENTS:

2.1.1 Cubicle Track: Heavy duty type, ceiling mounted or hanger mounted.



2.1.2 Cubicle Track, Heavy Duty Type: Extrude from aluminum conforming to 6063.T5 of ASTM B 221. Form track to a box channel Shape not less than 1 3/8-inch wide by 3/4-inch deep and a 0.050-inch minimum wall thickness with the underside having a slot to accommodate carrier unit. Finish, anodized.

2.1.2.1 Carrier Unit: A two-wheeled nylon roller, bead chain, and hook. Select the bead chain and hook from the following materials: Corrosion resistant steel (stainless steel), nickel plated brass, or aluminum.

2.1.2.2 End Stop and Pull-out: Fabricate from aluminum with an anodized finish matching the track finish or from nylon.

2.1.2.3 Hangers and Accessories: Fabricate from the same material with same configuration and finish as tracks.

### PART 3 - EXECUTION

3.1 INSTALLATION: Install cubicle track after painting and finishing operations are complete. Include all material indicated, specified or necessary for a complete finished installation. Contractor shall be responsible for the required quantities of track and components and shall carefully check all dimensions in the field as well as other conditions affecting the work.

3.1.1 Installation Details: Install heavy duty cubicle tracks on the ceiling or suspended from hangers as specified. Locate the cubicle tracks where indicated on the drawings. Use fasteners or hangers as shown and where indicated on the drawings. However, fasteners will not be spaced more than 3 feet on centers. Make a standard 8- by 8-foot cubicle track without joints and form a corner bend on a 12-inch radius to 90 degrees. Make straight track sections up to 16 feet without joints. Install 2.2 carrier units for each foot of track. Install end cap at each end of the track and pull out at one end to permit insertion and removal of carrier units. Securely fasten end stops to prevent their being forced out by striking weight of carrier units.

3.1.2 Acceptance Criteria: Carrier units shall operate smoothly and easily over the full range of travel. Install track plumb, level and true, and securely anchored to the ceiling to form a neat, rigid installation. Remove damaged or defective components and replace with new components or repair to the original state.

2 lines



\*\*\* END OF SECTION \*\*\*

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## SECTION 5

### OUTLINE SPECIFICATIONS

1. The Outline specification shall consist of general description, completion time, special working directives and a list of Sections within each division which are to be used in the project.

1.1 General Description: This paragraph shall give a general conception of the project and of the work involved in sufficient detail to present a general picture. It should be wholly self-contained and should not make reference to the drawings or to other parts of the specifications. Do not merely state that the work includes concrete work, masonry, carpentry, etc. The General Description is used for a quick comprehensive overview of the Project Specifications by review authorities.

1.2 Time for Completion: Shall be the best estimate available, taking into account long lead time procurement items, special working directives, and mission needs.

1.3 Special Work Directives: Include those directives that will influence cost, time for completion, and safety and security requirements.

1.4 Section Listing: Arrange listing in the NFGS 16-division format. The number, title, and date of the NAVFAC Guide Specification (NFGS) being used in the preparation of a section shall be identified. The major materials or systems selected for each section, whether or not they are based on a guide specification, shall be listed for each section. For projects requiring more than 5 divisions, list all 16 divisions. Where there is no work required in a particular division, a statement to that effect shall be included under the division heading. On small projects using only a few divisions (5 divisions or less) the listing of non-applicable divisions may be omitted.

2. Example: The following example of an outline specification for a Non-VE Study Team Project.

(EXAMPLE)

OUTLINE SPECIFICATION

FOR

REPAIRS TO DAMAGED CULVERTS,  
UTILITY POLES, ROADS AND RAILROAD BEDS

AT THE

CONSOLIDATED FLEET ACTIVITIES, YOKOSUKA,  
YOKOSUKA, JAPAN

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5-1

GENERAL DESCRIPTION. The work includes replacement of tidal culverts as required; removal of existing utility poles at Balsa Avenue including relocation of existing electrical cable and lines; replace damaged railroad bed including ballast, earthwork and grading; repairs to gravel surfaced roads; and erosion control work including replanting; complete-in-place in accordance with the Drawings and Specifications.

Time for Completion: 120 calendar days.

- DIVISION 1. GENERAL REQUIREMENTS
- SECTION 01010 GENERAL PARAGRAPHS  
Based on NFGS 01010 (1/86)
- SECTION 01011 ADDITIONAL GENERAL PARAGRAPHS  
Based on NFGS 01011 (3/86)
- SECTION 01400 CONTRACTOR QUALITY CONTROL  
Based on NFGS 01400 (3/86)
- SECTION 01401 CONTRACTOR INSPECTION SYSTEM  
Based on NFGS 01401 (6/85)
- SECTION 01560 ENVIRONMENTAL PROTECTION  
Based on NFGS-01560 (6/81)
- DIVISION 2. SITE WORK
- SECTION 02050 DEMOLITION AND REMOVALS  
Based on NFGS-02050 (3/84)
- SECTION 02200P EARTHWORK  
Based on NFGS-02200P (2/82)
- SECTION 02270 EROSION CONTROL  
A-E prepared
- SECTION 02271 STONEMASONRY  
A-E prepared
- SECTION 02519 ROADWORK  
A-E prepared
- SECTION 02950 RAILROAD WORK  
A-E prepared
- DIVISION 3. CONCRETE
- SECTION 03300 CAST-IN-PLACE CONCRETE  
Based on NFCS-03300 (2/84)  
To include repairs to existing reinforcing
- DIVISIONS 4 through 15 (not used)
- DIVISION 16. ELECTRICAL
- SECTION 16301 UNDERGROUND ELECTRICAL WORK  
Based on NFGS-16301 (4/84)
- SECTION 16302 OVERHEAD ELECTRICAL WORK  
Based on NFGS-16302 (2/84)



3. PACNAVFACENGCOM policy is to perform VE Team Studies On selected projects \$2,000,000 or more. If a VE Team Study is to be made on a project designed by an A-E, the Scope of Services Will state the requirement. On these types of projects, the 35% submission must contain all the information required for non-VE Team Study projects (paragraph 1 above), and the following as a minimum:

a. Division 1 should be as complete as possible, and include the following as a minimum:

- (1) General description of the project.
- (2) Completion time.
- (3) Special work directives that affect cost and schedules.

b. Each specification division should specify:

- (1) Materials (type, finishes, gages, strengths, weights, quantities, etc.).
- (2) Unusual workmanship requirements.
- (3) Unusual inspection/quality control requirements (nondestructive testing, etc.).
- (4) Equipment specifications.
- (5) Systems descriptions sufficiently complete that reasonably accurate cost estimates can be made.

4. Example : The following are examples of sections of outline specifications required for VE Team Study projects. (See attached sheets Sections 02200, 03300, 04230, 05120, 07830, and 11414.)

5. For A-E's that have not prepared construction contract specifications for the Navy or Marine Corps within the last 5 years, one complete section typed in final form from the A-E and each consultant contributing to the project shall be submitted at the 35% submission.

## SECTION 02200

### EARTHWORK

Based on NFGS-022OOP (Feb 1982)

1. WORK INCLUDED: All required excavation and embankment for the new building and parking and landscaped areas.

2. MATERIALS:

2.1 Soil Materials: In general, shall be free of debris, roots, wood, scrap material, vegetable matter, refuse, soft unsound particles, deleterious or objectionable materials.

2.1.1 Granular Fill: For capillary water barrier shall conform to the general requirements for soil materials above and shall be a clean, coarse grained crushed stone, uncrushed gravel. Or Crushed gravel conforming to the following gradation: 90 to 100 percent passing the 3/4-inch sieve and zero to five percent passing the No. 4 sieve, and with a sand equivalent of not less than 50 when tested in accordance with ASTM D 2419.

2.1.2 Filter Material: For capillary water barrier shall conform to the general requirements for soil materials above and shall be gravel conforming to JIS A 5005, class 5005.

2.1.3 Backfill and Fill: For structures and under spread footings, paving, or concrete slabs-on-grade which are not pile supported shall conform to the general requirements for soil materials above and shall be classified as GW, GP, GM, SW, SP, SM by ASTM D 2487 and conform to the following: liquid limit shall not exceed 35 percent when tested in accordance with ASTM D 423; plasticity index shall not be greater than 12 percent when tested in accordance with ASTM D 424, and no more than 25 percent by weight shall be finer than No. 200 sieve when tested in accordance with ASTM D 1140.

## SECTION 03300

### CAST-IN-PLACE CONCRETE Based on TS-03300 (Feb 1984)

1. WORK INCLUDED: Reinforced concrete strip footings, spread footings, and slabs on grade.
2. MATERIALS:
  - 2.1 Ready-mixed concrete:  
 $f'c = 3,000$  psi
  - 2.2 Reinforcing steel:
    - a. Bars shall be deformed, class SR 30, JIS G 3112.
    - b. Welded wire mesh, JIS G 3551, 100 mesh and 6 mm diameter.

## SECTION 04230

### REINFORCED MASONRY Based on NFGS-04230 (Jul 1984)

1. WORK INCLUDED: Exterior and interior reinforced concrete masonry walls and columns.
2. MATERIALS:
  - 2.1 Hollow Concrete Masonry Units. JIS A 5406, class C.
  - 2.2 Mortar and Grout, ASTM C476-80.
  - 2.3 Deformed billet steel bars, JIS G 3112, class SD 30A.

SECTION 05120

STRUCTURAL STEEL

Based on NFGS-05120 (Aug 1981)

1. WORK INCLUDED: Structural steel roof beams and girders; roof fascia framings; interior columns.
2. MATERIALS:
  - 2.1 Structural steel: JIS G 3101, class SS 41, of the sizes, Shapes and lengths indicated or required.
  - 2.2 Columns: JIS G 3444, class STK 41.
  - 2.3 Anchors:
    - 2.3.1 Expansion Shields: Fed. Spec. FF-S-325.
  - 2.4 Fasteners:
    - 2.4.1 Bolts and nuts shall be suitable for the use intended and shall conform to JIS B 1180 and B 1181, galvanized.
    - 2.4.2 Washers: JIS B 1256 for lock washers. Flat washers shall be suitable for the use intended.
    - 2.4.3 Anchor bolts shall conform to JIS B 1178, J-Type, galvanized.
  - 2.5 Shop Primers: Shall conform to JIS K 5633 for zinc-coated surfaces. and JIS K 5627 for uncoated ferrous surfaces.
  - 2.6 Zinc Coating: Conforming to JIS H 8641 for general use.
  - 2.7 Welded Electrodes and Rode: JASS 6, subparagraph 2.3.

SECTION 07830

ROOF SCUTTLE  
A/E Prepared

1. WORK INCLUDED: Provide roof scuttle unit, complete.

2. ROOF SCUTTLE :

2.1 Roof scuttle shall be of size as indicated on the drawings. single-leaf type. designed for 40 pounds per square foot external loading and 20 pounds per square foot internal loading pressure. Frame, cover and cover liner shall be constructed of steel Sheet. conforming to JIS G 3302, class SGC 35R-727.

2.2 Frame shall be of 14-gage steel with 1a-inch-high curb. integral counterflashing. 3 1/2-inch-wide mounting flanges with pre-drilled holes, and minimum one-inch-thick rigid fiberboard insulation, mounted on exterior surface of curb. Counterflashing shall be full welded at the corners for weathertightness.

2.3 Cover shall be of 14-gage steel top sheet with one-inch glass fiber insulation enclosed by a 22-gage steel liner.

2.4 Scuttle shall be assembled complete with heavy pintle hinges, compression spring operators enclosed in telescopic tubes, positive snap latch with turn handles and inside padlock hasp. and neoprene draft seal. Cover shall be equipped with an automatic hold-open arm complete with red vinyl grip handle to permit easy one-hand release. All hardware shall be cadmium or zinc plated.

2.5 Factory finish shall be red oxide primer over galvanized steel.

## SECTION 11414

### STAINLESS STEEL COUNTERS A/E Prepared

1. WORK INCLUDED: Provide stainless steel countertop where indicated.

2. MATERIALS:

2.1 Stainless steel sheets: JIS G 4305. Type 201, 202, 301, 302, or 304, with a 5mm or better finish on all visible surfaces. Gages specified or shown are U.S. Standard.

2.2 Counters with Integral Sink: Single compartment, 18-gage stainless steel with drainboard, conforming to MIL-S-19114, Type 1, Class 2, Style C. Compartment size shall be as indicated. Support counters on tubular legs with adjustable flanged feet drilled to allow for attachment to the floor.

2.2.1 Plumbing fittings, piping, and connections are specified under Section 15401: PLUMBING.

2.3 FABRICATION:

2.3.1 General: In joining pieces of similar metal, fastening devices and metal used for welding shall be of the same material as the metal being joined. When a corrosion-resisting material is joined to a dissimilar metal, fastening devices and metal used for welding shall be corrosion-resisting steel.

\*\*\* END OF SECTION\*\*\*

## SECTION 6

### CONTRACT SPECIFICATIONS

1. GENERAL: The specifications form an important part of a construction contract. Specifications must be concise, precise, and free from ambiguities, duplications, and omissions which could cause controversies and claims for additional compensation. Specifications shall be in sufficient detail so that, when used with the applicable drawings, bids can be prepared on a fair and competitive basis. Materials, equipment, components, or systems shall be described, where possible, by reference to documents generally known to industry. The documents include Federal, military, or nationally-recognized industry, and technical society specifications and standards. The standards which best represent the government's minimum needs shall be selected for incorporation by reference into the construction specifications.

2. REFERENCE DOCUMENTS: Source of supply for reference documents used in the preparation of contract specifications is covered in SECTION 2.

2.1 MILITARY BULLETIN 34, "Engineering and Design Criteria For Navy Facilities": This is an index of governmental and non-governmental Specifications and Standards used by PACNAVFACENGCOM as a guide or reference document. Issued quarterly, it contains lists of all the documents referenced in the Guide Specifications with the respective dates of issue. P-34 is not all inclusive concerning federal, Military, or non-government Specifications, and the A-E should avail himself of the more complete indexes issued for the applicable category of document, where necessary, i.e., the Department of Defense Index of Specifications and Standards (DODISS).

2.2 NAVFAC GUIDE SPECIFICATIONS (NFGS): The Navy has adopted the standard DIVISION numbering and titling system developed by CSI and also agrees in general with the distribution of section titles into their respective divisions. Do not use the CSI system of paragraph numbering. Use paragraph numbering as shown in Section 4.

2.3 Division 1. "General Requirements": Sections in this Division specify administrative and procedural requirements applicable to the technical sections. Divisions 2 through 16.

2.3.1 Bid Items: Bid items shall be used when the estimates for the total facility indicate a doubt that the low bid will fall within the funds available. Bid items must be additive and be limited to a total of three. Bid Item 1 shall be established as the least scope of work which will provide a usable facility. Then additive items shall be listed for separate items of work for which prices will be quoted, and which will be added to the base bid item to determine the low bidder. The bid items shall be listed in an

order of decreasing priority. Bid item information shall be prepared in the format as shown at the end of this section. Specifications and contracts for repair services, particularly those for whole house repairs, generally must recognize the uncertain and often unknown requirements which arise after the contractor begins work. Many of these contracts call for repair of structural damage, the full extent of which is not apparent until after existing walls have been removed. This type of contract generally requires consideration of open-end requirements - type line items of discrete work items. These line items are generally "added-on" to a firm fixed price (lump sum) line item or line items so as to form a "combination or composite" contract. Consideration of "time and material" line items may even be necessary in those circumstances where work to be done cannot even be defined as to type. The A-E involved with a housing repair contract must make close and continuous coordination with the government during specification and design preparation to insure the best possible contract type or combination of contract types is applied to the project.

2.3.2 Alternates: Bid items for alternates in a specification are not permitted. If, in an unusual circumstance, the designer considers the use of alternates in a specification advantageous to the government, a request with justifications shall be submitted to Code 02, PWC YOKOSUKA for approval.

2.3.3 Pre-Qualification of Bidders or Contractors: Code 02, PWC YOKOSUKA approval is required prior to including prequalification requirements in specifications for bidders. It is permissible to require the Contractor to provide certain qualification data relative to all or portions of the work and require approval of such data prior to allowing him to proceed with the work affected after Contract award.

2.3.4 Specification Cover Sheet or Title Page: Shall be completed in accordance with the format set forth in PWC YOKOSUKA 01010, "General Paragraphs".

2.3.5 Table of Contents: Each division shall be listed and each section shall be listed by section number and title, respectively. Page numbers for sections need not be listed. The page numbering of the Table of Contents shall be as follows: i. ii. iii. etc.

2.4 Guide Specifications: Where an area of work is covered by PWC YOKOSUKA and Guide Specifications, they shall be used in the preparation of the appropriate section. PWC YOKOSUKA Guide Specifications, identified by a "Y" after the section number, supersede or take precedence over other type specifications relating to the same subject. All Guide Specifications must be edited by the A-E to fit each particular project. This includes the selection of the proper options, omission of inapplicable portions, addition of items not covered and updating all applicable documents;.



2.5 Organization: The format of technical sections shall be organized as shown in the example of Section 4. The method used in organizing the technical requirements in the body of the Specification shall follow the particular Guide Specification used. or in the absence of such, the general guidance found in this instruction shall be used. Generally speaking, Guide Specifications make up the main body of guidance to the designer and shall be considered mandatory for use except where otherwise directed or where they are clearly not applicable.

2.6 DOD Family Housing Guide Specifications (Also Referred to by GSH Number): Guide Specifications prepared by the Department of Defense (DOD) to provide uniformity in the design and construction of family housing. Present DOD policy is that each of the individual armed services will develop the policy for its own family housing. OICC FE/PWC YOKOSUKA policy is to have construction Specifications written to conform to Navy or local housing standards, whichever is more stringent. NAVFAC Guide Specifications shall be used in lieu of DOD Family Housing Guide Specifications.

2.7 Standard Specification (SS): A SS is developed to accompany a Standard Drawing SD and controls the quality of the facility or structure constructed. When a SD is used for construction, the associated SS is required to accompany it: thus, SSs must be included in project specifications verbatim. A SS cannot be revised or edited for inclusion in a project specification without NAVFAC approval. Currently, there are 4 SSs in the NAVFAC Criteria inventory.

2.8 Reference Specifications and Standards: Documents which are referred to for quality or performance within a particular technical section and is intended to encompass Federal and Military Specifications and Standards as well as ASTM, ANSI, UL, NEMA and any other similar documents. The following order of priority shall be observed when reference documents are specified.

- a. Commercial standards and specifications where they will provide results satisfactory to the functional requirement of the government:
- b. Federal Specifications where the requirement cannot be satisfied by Commercial sources:
- c. Military Specifications where neither Commercial nor Federal Specifications exist, or if those existing do not satisfy the minimum functional requirement of the government:
- d. Brand name or equal: then
- e. Proprietary specifications.

2.8.1 The A-E must become familiar with the documents he is referencing in order to provide a complete selection basis for the Contractor. Most of these documents include various grades, styles, types, sizes, colors, and other classifications. Make suitable selection and include the appropriate data. List referenced documents in the proper order.

a. Generally, the order found in P-34 shall be used. For Federal documents, items shall be listed alphabetically first and then numerically.

b. Military documents shall be listed numerically.

2.8.2 Updating: Use the latest applicable references available. (For A-E's, the latest references will be those available On the date of their contract award). Source of this updating information are the current issue of P-34, DODISS and commercial information systems (IHS, IMI, etc). Do not include dates and revision data for referenced publications in the body of the section. Keep in mind that the listing must include all of the publications which have been referenced within the technical paragraphs of the section and that the list shall contain only those so referenced. The A-E will be held fully responsible for providing a complete and cross-checked listing at the 100% stage which complies with these instructions.

### 3. SPECIAL REQUIREMENTS:

3.1 Options: An option allows the Contractor to choose one of several different materials, methods, or designs. An option does not change the scope of the work. The right to select an option rests only with the Contractor. The specification shall not require bidders to identify the option they intend to select. After the award of the Contract, the Contracting Officer may require the Contractor to state the options that he intends to exercise. In designing and specifying for options, the specification must clearly identify, indicate, and detail each one as if it was the only one allowed. This shall be done on the drawings as well as in the specification if any of the details between options differ. An improper way of handling this would be to detail and specify a masonry wall and then state that the Contractor may choose to provide a wood frame wall, without indicating details or specifications to cover the other method. In using the "Type or Guide" Specifications, it is particularly important to include the options stated therein, unless the particular environment makes this impossible.

3.1.1 Specifying Options: Attention is called to a practice of listing several optional materials or methods of performance in the specifications with the concept that each of these will result in satisfactory performance. The unsuitability of any listed material or method may be a specification defect entitling the contractor to extra performance and delay costs. For example:

- a. In connection with ASBCA No. 15183, Appeal of Edward R. Marden Corp., under Contract NBy 66498 (south Weymouth Aircraft Maintenance Hangar). the specifications provided:
- 6A.13 Wood Nailers and Blocking. Wood nailers shall be provided at all eaves and edges of the roof and elsewhere as indicated; the wood nailers and blocking shall be anchored in position by means of expansion bolts, concrete nails, powder actuated anchors or other approved method. The wood nailers shall be of such thickness as to finish flush with the top surface of the roof insulation board. Similar wood blocking and nailers shall be provided on the tops of all concrete curbs on the roof affording a base for air intakes and vent fans. (Emphasis added.)
- The Contractor tried to use concrete nails but could not get satisfactory results, shifted to powder-actuated bolts and toggle bolts, and shifted again to expansion bolts. and claims \$42,967 for the extra costs of attempted performance with concrete nails. of the bolts over nails. and of the delay. The Navy contends that the Contractor was responsible for a satisfactory method of securing the nailers and that improper alignment of roof plank cores and traffic on the nailers resulted in the unsatisfactory work.
- b. Unhappily, the decisions establish that a listing of materials or methods of performance amounts to a representation that any of these will result in satisfactory work. Roscoe Engineering Corp. and Association, ASBCA 4820, 61-1 BCA 15,244 (contract gave choice of loaded box or anchor pile method for vertical pile test. Upon satisfactory results with anchor piles. government required the use of a loaded box at extra cost; held, Contractor entitled to equitable adjustment): J. G. Watts Constr. Co., ASBCA 9445, 65-1 BCA 22,043 (asbestos-cement sewer pipe failed where cast-iron pipe would not have, but Contractor had option to use asbestos-cement pipe and need not Strengthen such pipe to meet conditions); Peter Kiewit Sons' Co., ASBCA 6294, 61-1 BCA 15,464 (drawing held not to modify 46Yb option to saw concrete joints; Contractor entitled to increased costs of performance); Lehigh Chemical Co., ASBCA 8427, 1963 BCA 18,698 (when specs permit more than one method, restriction of performance is a change).
- c. In addition, the Court of Claims has recently made clear that where Plans and Specifications are defective and must be changed, any delay whatsoever (not merely delay beyond a reasonable time) is compensable as a suspension of the work or as a breach of contract. Chaney and James Constr. Co. v. U.S., ct. Cl. 150-67, 20 February 1970. Therefore, the Contractor here demands \$500 damages for every day of delay and asserts that the nailer problem prevented completion of the roof, held the work up over the winter, etc.

3.2 Use of "Contracting Officer": There are two parties to all construction contracts - the Contractor and the Contracting Officer. Throughout all technical sections, any reference to the party of the second part shall be to the Contracting Officer. Do not use Resident Officer in Charge of Construction or ROICC, as this is merely the office where the administration of the contract is taking place. The use of the term "government" may be used as a general term not intended to make a binding statement on either party to the contract. Where the term Contracting Officer is appropriate, it should be spelled out and not abbreviated.

3.3 Contract Clauses: The "Contract Clauses" (FAR) of the contract contain many requirements which affect the general conduct of the work on the contract. Specifiers shall become familiar with the clauses.

BIDDING INFORMATION

Bid for \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Specification Number: \_\_\_\_\_

ITEMS OF BIDS:

- Item 1. Price for the entire work, complete in accordance with the drawings and specifications, but not including work indicated or-specified to be provided under any of the other bid items.
- Item 2. Amount to be added to the price bid under Item 1 for the addition of

\_\_\_\_\_  
\_\_\_\_\_

complete in accordance with the drawings and specifications.

Item 3. Amount to be added to the price bid under Item 1 for  
the addition of

\_\_\_\_\_

\_\_\_\_\_

complete in accordance with the drawings and specifications.

Construction Contract  
Number: \_\_\_\_\_

\*\*\* END OF SECTION \* \*\*

SECTION 7  
QUALITY CONTROL

1. QUALITY CONTROL FOR CONSTRUCTION CONTRACTS, ADMINISTRATION AND RESPONSIBILITY:

1.1 The contract clause titled "Inspection of Construction (FAR 52.246-12 Apr 84)" states, in part: "The Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that the work called for by this contract conforms to contract requirements."

1.3 Quality Control is the responsibility of the Contractor for the "Contractor Quality Control system (CQC)," Section 01400 and "Contractor Inspection System (CIS)," Section 01401. It's a system of planning activities that the Contractor must perform to properly prepare before beginning a phase of work to ensure that the accomplished work is in accordance with the contract.

1.3 Quality Assurance means the various functions, including inspection, performed by the government to determine whether a contractor has fulfilled the contract Obligations pertaining to quality and quantity.

C O M P A R I S O N   O F   C Q C / C I   S Y S T E M S

CQC SYSTEM (NFGS-01400)

CI SYSTEM (NFGS-01401)

LEVELS OF APPLICATION:

\$2,000,000 or more  
(Est. Const. Cost)

Less than \$2,000,000 (Est. Const. Co:  
If CQC desired, approval required  
from PACNAVFACENGCOM Code 05 for spec  
waiver with appropriate justification

SPECIFICATIONS CONSIDERATIONS:

Div. 1: Submittals are approved  
by the government.

Div. 1. Same as CQC

Div 2-16: Submittals approved by  
the Contractor unless  
Specified otherwise.  
Note: Ensure items  
requiring government  
approval are identified  
in specifications  
(Submittal Status Log  
forms).

Submittals approved by the  
government

1.4 Submittal Status Log. (Sample form attached.) A-Es shall Complete items (a) through (e) of the form and also item (1). "Remarks" column, indicating critical and long lead time items.

1.5 Testing Plan. (Sample form attached.) A-Es shall complete items; Specification Sections and Paragraph: Item of Work; and Tests Required.

2. GENERAL GUIDANCE: Since it is not practical to cover all items of construction in the Guide Specifications, sound professional judgment must be exercised to provide quality controls necessary to reasonably assure design integrity and quality construction. Do not require "samples" for approval, when "manufacturer's data" will suffice. When specified that an item be installed in accordance with the manufacturer's printed instructions and details, require that such printed instructions and details be submitted for approval. Shop drawings are sometimes required for fabrication or installation of an item which is considered critical or complex or which has not been detailed, or because the Contractor has the option of choosing two or more alternatives to accomplish the specific function: in these cases, approval by the designer is required. Approval of certifications and certified test reports for most materials should be ROICC or Contractor's Quality Control Representative responsibility.

3. APPROVAL RESPONSIBILITY: The following is provided as general guidance :

a. A/E Review and Recommendation of Approval: Significant functional and structural elements and aspects of the design and those architectural features, materials and finishes which contribute prominently to the aesthetics of a structure, both interior and exterior, are considered essential to design integrity and must be recommended for approval by the designers. Some examples are:

- (1) Architectural concrete panels
- (2) Structural steel and-concrete design
- (3) Concrete and asphaltic concrete mix designs, as appropriate (see "b." below)
- (4) Special interior and exterior finishes, paints and protective coatings. (Color/design selection should be by the customer)
- (5) Foundation Piling
- (6) Finish Hardware (except keying system)
- (7) Plumbing and mechanical equipment
- (8) Electrical equipment and temperature controls.

b. Government Review and Approval: Submittals and quality control functions pertaining to fire protection, safety, and other items as selected, will be reserved for government approval. Some examples are:

- (1) Shop drawings and data for fire sprinkler systems and fire protection equipment
- (2) Acceptance tests for fire protection equipment, elevators, and boiler installations
- (3) Submittals and testing concerning fire alarm and detecting systems

NOTE: Approval of mix designs will be the responsibility of the Contractor's CQC Representative, the A/E or the ROICC, depending upon the size, complexity, structural importance, and criticality of location.

c. ROICC Review and Approval: Consult with ROICC's on their technical and staffing Capabilities. Submittals and other quality control functions within the ROICC's capability should be approved by him. Some examples are:

- (1) Division 1 submittals schedule of prices, schedule of work, etc.
- (2) Temporary utility connections
- (3) Steel doors and frames
- (4) Metal studding and gypsum wallboard
- (5) Thermal insulation
- (6) Concrete and asphaltic concrete mix designs, as appropriate (see "b" above)
- (7) Conventional painting materials and application methods
- (8) Operational tests for hoists and cranes, and other operational testing within ROICC capability
- (9) Keying system for finish hardware

For construction contracts administered under CQC, items (3), (4), (5) and (7) above, should be approved by the Contractor's CQC representative.

d. Contractor Approval (CQC Projects): For the majority of the submittals required in the technical sections, Divisions 2 through 16 of the specifications, the Contractor should be



identified as the approval party. Generally, the specialized personnel required on the CQC staff should review submittals in their discipline. The intent is not to duplicate work covered in the specifications Section 01400, Contractor Quality Control whereby the Contractor is required to provide specialized personnel (CQC staff) who are qualified to do the submittal reviews.

\*\*\* END OF SECTION \*\*\*

## SECTION 8

### PREPARATION OF SOLICITATION AMENDMENT (BEFORE AWARD)

1. INTRODUCTION: Amendments, Modifications, and Change Orders may be employed to modify documents, but reliance on them to correct poorly prepared drawings and specifications should be avoided. However, despite best efforts and planning, situations do develop that require changes. If changes are required, immediate action shall be taken to effect the issuance of an Amendment in accordance with established procedures.

2. DEFINITION: Solicitation Amendments are written and/or graphic instruments that are issued prior to the Opening of Bids which clarify, revise, add to, or delete from the original Bidding Documents or previous Amendments.

3. PURPOSE: The primary purpose of an Amendment of Solicitation is to correct errors or omissions in Drawings and Specifications, Clarify questions raised by bidders, or issue new requirements, including decisions to decrease or increase the scope of certain work. Amendments are used wherever it is necessary to change the Bidding Documents in any way, for example:

- a. To change date, time, or location of receipt of bids.
- b. To change time for completion of the work.
- c. To change quality of the work.
- d. To change a method, sequence, or manner of performance of the work.
- e. To change materials and equipment to be salvaged.
- f. To change government-furnished facilities, equipment, materials, services, or site.
- g. To add, delete, or revise Drawings and Specifications.

4. COST ESTIMATE: Submit each amendment with a detailed cost estimate. The estimate may either incorporate the cost changes as a revision of the previously submitted construction cost estimate or may be a separate estimate. The former is the preferred manner. Should the construction cost be unchanged as a result of the Amendment, a statement of "No Change In Cost" shall be submitted with the Amendment.

5. GENERAL PROCEDURES:

5.1 Proportion: Keep the value of the work in mind. It may sometimes be advantageous not to issue numerous Amendments for noncritical changes that can be deferred, especially those that do not affect cost. Numerous minor changes may be covered with simple statements. Combine numerous minor changes into one Amendment.

5.2 Timeliness: Bidders must be given corrections and additional information in time to actually use them in the preparation of bids. Questionable matters should not remain unclarified. It is NAVFAC policy and in conformance to the requirement of NAVFAC P-68, Paragraph 14-208, that an Amendment not be issued within 10 days of bid opening date. A minimum of 10 calendar days should be allowed between issuance of an Amendment and the date for bid opening, except, when in case of emergency, a Level I Contracting Officer makes a determination that a shorter time period is appropriate.

5.3 Haste: Do not attempt to make major last-minute changes by issuing a few simple inadequate statements in a hastily prepared Amendment. If it is imperative that a last-minute Amendment be issued, advise the PDE.

5.4 Clarity: Bidders often wish to forward copies of Amendments to Subcontractors for insertion into working sets of documents. The Amendments should be easily reproducible by office copying machines. Amendments shall be typed on 8-1/2" x 11" white bond paper, and shall be submitted with bond original and one copy to the PDE.

5.5 Page Numbering of Amendments: The Amendment number shall follow the specification number at the bottom of the page, example:

42-88-0321  
Amendment No. 0001  
2 of 5

5.6 Amendment Numbers: Amendment numbers will be assigned and inserted in accordance with OICC Far East Code 02 instructions.

6. FORMAT: A Solicitation Amendment shall be prepared utilizing Standard Form 30, of latest issue, entitled "AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT" as the first page. The Standard Form 30 will be issued by OICC Far East Code 02. (See example on page 8-3.)

The Technical Sections of the Amendment shall be prepared on successive pages by A-E or the specifier in accordance with the guide entitled "Guide for Preparation of Amendment and Change Order Request."

## SECTION 9

### PREPARATION OF CHANGE ORDER OR CHANGE ORDER REQUEST (COR) (MODIFICATION AFTER AWARD)

1. GENERAL: Modification After Award shall be prepared in the same manner as Amendments of Solicitation (See Section 8) except, in lieu of Standard Form 30, the first page shall be in accordance with the guide entitled "Guide for Preparation of Amendment and Change Order Request."

(1)

DEPARTMENT OF THE NAVY  
OFFICER IN CHARGE OF CONSTRUCTION  
NAVAL FACILITIES ENGINEERING COMMAND  
CONTRACTS, FAR EAST

NAVFAC  
SPECIFICATION  
NO. 42-8X-XXXX (2)

Construction Contract No.  
N62836-8X-C-XXXX (3)  
Appropriation: (4)  
Project No. XXXXXX (5)  
WR No. XXXXX (6)  
PDE: XXXXX (7)

INSULATION DOCUMENT  
TO BE PLACED IN ARCHIVES  
RETAIN UNTIL COURT ORDER IS VACATED,  
MODIFIED OR RESCINDED (8)

XXXXXXXXXXXXXXXXXXXXXXX (9)

for the  
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX (10)  
XXXXXXXXXXXXXXXXXXXXXXX

DESIGNED/SPECIFICATION  
PREPARED BY: (11)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Specification Prepared By:

Architectural: \_\_\_\_\_ Civil: \_\_\_\_\_ Structural: \_\_\_\_\_ (12)

Electrical: \_\_\_\_\_ Mechanical: \_\_\_\_\_ Submitted by \_\_\_\_\_ (12)

DATE: \_\_\_\_\_ (13)

SPECIFICATION APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

FOR COMMANDER, NAVFAC: \_\_\_\_\_ DATE: \_\_\_\_\_

(16)

Note: 1. Fill the blanks (XXXXXX) as follows:

- (1) Provide 5 - 7 line spaces.
  - (2) Specification Number.
  - (3) Construction Contract Number.
  - (4) Enter "MCON" for UMC project and "O&MN" for special project.
  - (5) Special Project Number: special, MCON, or NAF as indicated in the A-E statement of work.
  - (6) Work Request Number.
  - (7) PDE's Code and Name.
  - (8) Type or stamp the statement on the cover sheet whenever removal of asbestos contained materials is included in the project.
  - (9) Exact Name of Project.
  - (10) Activity's name as addressed in the A-E statement of work, such as "U.S. Naval Supply Depot, Yokosuka, Japan".
  - (11) Prime A-E's name and address as shown on the contract drawings. such as "Yamada Engineering Co., Ltd., 10-10 10-chome, Honcho, Yokosuka-shi, Kanagawa-ken, Japan. If entire specification sections were prepared by the prime A-E, the heading should be combined to read "DESIGN & SPECIFICATION BY:"
  - (12) Place the names of preparers and signature. Type firm name below the preparer's name if consultant was used. In addition, the cover sheet shall be signed by a corporate member of the A-E firm responsible for submitting the specifications.
  - (13) Final submittal date. If corrections were required on the final submittal, enter the date when the corrections were submitted to the PDE.
  - (14) Leave blank.
  - (15) Leave blank.
  - (16) Provide 10 - 15 line spaces for stamp of program manager officer.
2. Set the top and bottom margins to 6, the left margin to 10 and the right margin to 70.

## CONTENTS

DIVISION 1	GENERAL REQUIREMENTS
Section 01010	General Paragraphs
Section 01011	Additional General Paragraphs
Section 01401	Contractor Inspection system
Section 01569	General Requirements for Work In Fuel Storage Area
DIVISION 2	SITE WORK
Section 02050	Demolition and Removal
Section 02444	Fence, Chain Link
Section 02573	Bituminous Hot Mix Pavement
Section 02671	Bituminous Tack Coat
Section 02672	Bituminous Prime Coat
Section 02673	Bituminous Seal Coat, Spray Application
Section 02686	Graded Aggregate Base Course for Flexible Pavement
Section 02713	Exterior Water Distribution System
Section 02722	Exterior Sanitary Sewer System
DIVISION 3	CONCRETE
Section 03302	Cast-in-Place Concrete
DIVISION 4	MASONRY
Section 04230	Reinforced Masonry
DIVISION 5	METALS
Section 05120	Structural Steel and Miscellaneous Metals
Section 05500	Metal Fabrications
DIVISION 6	WOOD AND PLASTICS
Section 06200	Rough and Finish Carpentry

42-8X-XXXX (1)

DIVISION 7	THERMAL AND MOISTURE PROTECTION
Section 07232	Ceiling, Wall, and Floor Insulation
Section 07410	Preformed Metal Roofing and Siding
Section 07511	Aggregate-Surfaced Bituminous Built-Up Roofing
Section 07600	Flashing and Sheet Metal
Section 07920	Sealants and Calkings
DIVISION 8	DOORS AND WINDOWS
Section 08110	Steel Doors and Frames
Section 08120	Aluminum Doors and Frames
Section 08210	Wood Doors
Section 08520	Aluminum Windows
Section 08800	Glazing
DIVISION 9	FINISHES
Section 09250	Gypsum Wallboard
Section 09310	Ceramic Tile
Section 09500	Acoustical Treatment
Section 09650	Resilient Flooring
Section 09910	Painting of Buildings (Field Painting)
DIVISION 15	MECHANICAL
Section 15011	Mechanical General Requirements
Section 15050	Mechanical Pipings
Section 15250	Insulation of Mechanical Systems
Section 15400	Plumbing
Section 15501	Fire Extinguishing Sprinkler system
Section 15653	Air Conditioning System



Section 15721	Heating System
Section 15820	Air Supply System
DIVISION 16	ELECTRICAL
Section 16011	Electrical General Requirements
Section 16301	Underground Electrical Work
Section 16302	Overhead Electrical Work
Section 16402	Interior Wiring Systems
Section 16475	Interior Switchgears and Switchboards. Low-Voltage
Section 16510	Interior Lighting
Section 16530	Exterior Lighting
Section 16722	Fire Alarm and Fire Detecting System (Local)

Note: (1) Fill the blank with Specification Number.

TECHNICAL REVIEW SUBMITTAL LIST

REPAIR SEAWALL, DEGAUSSING RANGE

for the

COMMANDER FLEET ACTIVITIES,

YOKOSUKA, JAPAN

CONSTRUCTION CONTRACT NO. N62836-87-C-0202  
NAVFAC SPECIFICATION NO. 42-87-0202

Note: In all cases the body of the specifications shall govern any discrepancies. This summary does not relieve the responsibility of reading the specifications.

<u>SECTION NO.</u>	<u>SECTION TITLE AND PARAGRAPH</u>	<u>SUBMITTAL</u>	<u>Reviewed by ROICC A-E</u>	
01010	GENERAL PARAGRAPHS			
	Para. 1.8	Schedule of Prices	X	
	Para. 1.13	As-Built Records		X
	Para. 1.14	Proposed Material Submittals, Catalog Data and Samples		X
	Para. 2.10	Performance of the Work, and Safety	X	
	Para. 2.11	Man Hour Report	X	
01011	ADDITIONAL GENERAL PARAGRAPHS			
	Para. 1.2	Information Required of the Contractor	X	
	Para. 1.3	Project Schedule and Time Constraints	X	
01401	CONTRACTOR INSPECTION SYSTEM			
	Para. 1.4.1	Submittal Status Logs	X	
	Para. 2.1.6	Daily Report to Inspector	X	
02050	DEMOLITION AND REMOVAL			
	Para. 1.2	Submittals	X	

42-87-0202

1

Y-SPEC 1/89  
(Encl 3 - 1/3)

<u>SECTION NO.</u>	<u>SECTION TITLE AND PARAGRAPH</u>	<u>SUBMITTAL</u>	<u>Reviewed by ROICC</u>	<u>by A-E</u>
02221	EARTHWORK FOR STRUCTURES AND PAVEMENTS			
	Para. 1.4.1	Certified Laboratory Test Reports		X
02369	STEEL SHEET PILING			
	Para. 1.2.1	Shop Drawings		X
	Para. 1.2.2	Certifications		X
	Para. 1.2.3	Equipment Descriptions		X
	Para. 1.2.4	Manufacturer's Data	X	
02444	FENCE, CHAIN LINK			
	Para. 1.2.1	Catalog Cuts		x
	Para. 1.2.2	Manufacturer's Installation Instructions	X	
02573	BITUMINOUS HOT MIX PAVEMENT			
	Para. 1.3.1	Job Mix Formula		X
03300	CAST-IN-PLACE CONCRETE			
	Para. 1.3.1	Shop Drawings		X
	Para. 1.3.2	Contractor Mix Design		X
	Para. 1.3.3	Certificates of Compliance	X	
	Para. 1.3.4	Catalog Data		X
05400	COLD-FORMED METAL FRAMING WITH ALC PANELS			
	Para. 1.3.1	Certificates of Conformance	X	
	Para. 1.3.2	Shop Drawings and Manufacturer's Data		X
	Para. 1.3.3.	Manufacturer's Data		X
	Para. 1.3.4	Qualification of Welders	X	
07120	THERMAL AND MOISTURE PROTECTION			
	Para. 1.2.1	Certificates of Compliance	X	
	Para. 1.2.2	Manufacturer's Data		X
16011	ELECTRICAL GENERAL REQUIREMENTS			
	Para. 1.3.1	Shop Drawings		X
	Para. 1.3.2	Manufacturer's Data		X
	Para. 1.3.3	Publication Compliance	X	
	Para. 1.3.4	Certified Test Reports	X	
	Para. 1.3.5	Certificates of Compliance	X	

42-87-0202

2

Y-SPEC 1/89  
(Encl 3 - 2/3)

<u>SECTION NO.</u>	<u>SECTION TITLE AND PARAGRAPH</u>	<u>SUBMITTAL</u>	<u>Reviewed by</u>	
			<u>ROICC</u>	<u>A-E</u>
16642	CATHODIC PROTECTION BY IMPRESSED CURRENT			
	Para. 1.3.1	Certificates of Conformance	X	
	Para. 1.3.2	Shop Drawings		X
	Para. 1.3.3	Catalog Cuts		X
	Para. 1.3.4	Operation and Maintenance Instructions	X	
	Para. 1.3.5	Instruction to Government Personnel	X	
	Para. 3.2	Tests	X	

42-87-0202

3

Y-SPEC 1/89  
(Encl 3 - 3/3)

## APPENDIX Q: CURRENCY EXCHANGE RATE INFORMATION

1. OICCFEINST 7100.11, Change 1, of 23 Mar 1994



DEPARTMENT OF THE NAVY  
 OFFICER IN CHARGE OF CONSTRUCTION  
 PACIFIC DIVISION, NAVAL FACILITIES ENGINEERING  
 COMMAND DETACHMENT, FAR EAST  
 PSC 473 BOX 61  
 FPO AP 96349-2903

OICCFEINST 7100.11  
 90:GER:ym  
 13 Sep 93  
 CH-1  
 23 Mar 94

OICC PACNAVFACENGCOM DET FAR EAST INSTRUCTION 7100.11

From: Officer in Charge of Construction, Naval Facilities  
 Engineering Command Contracts, Far East

Subj: YEN/DOLLAR CURRENCY EXCHANGE RATES

Encl: (1) Sample MIPR & Acceptance  
 (2) SOP of 7 Aug 91 (revised) w/attachments

1. Purpose. To define the appropriate currency exchange rate applicable to contracts administrated by all Officer in Charge of Construction, Naval Facilities Engineering Command Detachment, Far East offices for the various user activities.

2. Cancellation. OICCFEINST 7100.1H.

3. Background. OICC PACNAVFACENGCOM DET Far East contracts are awarded in yen amounts (except to SOFA sponsored contractors). To simplify budgeting for overseas activities, fixed currency exchange rates have been established. OICC PACNAVFACENGCOM Far East offices use the following fixed currency exchange rates:

a. Budget Exchange Rate: These rates are established annually by DFAS and are applicable to contracts financed by appropriations indicated in subparagraph 3c below. Since the yen costs are established, funding activities can determine the amount of U.S. dollars required to meet those costs. The variance between the actual exchange rate incurred at time of contract payment(s) and the budget execution rate is absorbed by CNO/CMC in a centrally managed foreign currency fluctuation account. There is no charge to the funding activity.

b. Current Exchange Rate: Established by OICC PACNAVFACENGCOM DET Far East Headquarters and applicable to all contracts financed by the appropriations as noted in subparagraph 3c below. This rate is normally set higher than the prevailing execution rate to assure sufficient funds are available to cover the contract cost.

C. Common Appropriations and Applicable Currency Exchange Rate: Listed below are the appropriations most frequently encountered and the applicable Currency Exchange Rate:

<u>APPROPRIATION</u>	<u>CURRET EX RATE</u>	<u>% OF SIOH CHARGE CONST F S C</u>	(R)
1721823 O&M, N Supplemental	Budget		

<u>APPROPRIATION</u>		<u>CURRENT EX RATE</u>	<u>% OF SIOH CHARGE</u>	
			<u>CONST</u>	<u>FSC</u>
17*1106	O&M, MC	Budget		
17*1804	O&M, N	Budget		
17*7030	Fam Hsg MILCON, Navy & Marine Corps	Budget	6.5	4
17*7035	Fam Hsg O&M, Navy & Marine Corps	Budget	6.5	4
17*1205	MILCON, Navy	Budget	6.5	4
21*2020	O&M, Army	Budget	7.5	4
21*2050	MILCON, Army	Budget	7.5	4
97*0100	O&M Defense Agencies	Budget	7.5	4
17x4911	Navy Stock Fund	Current	6.5	4
17x4913	Marine Corps Stock Fund	Current	6.5	4
57x4922	Air Force Stock Fund	Current	7.5	4
57*3400	O&M Air Force	Budget	7.5	4
57X8420	Commissary Air Force	Current	7.5	4
17*1810	Other Proc., Navy (PPN)	Current	6.5**	4**
97X4961	Defense Stock Fund	Current	7.5	4
---	Non-approp. Fund (REIM)	Current	6.5	4
97x4930	DBOF	Current	6.5	4
97*0131	RPM,D	Current		
69X0201	U.S. Coast Guard	Current	7.5	4
5737045	Military Fam Hsg Air Force	Budget	7.5	4

\* Fiscal Year

\*\* Except for CESE Equipment

#### 4. Effective Exchange Rates

- R) a. FY94 Budget Ex/Rate: \$124.38/\$  
(MILCON & Family Housing)  
¥129.53/\$
- R) b. FY93 Budget Ex/Rate: ¥130.11/\$  
(All accounts)
- c. Current Exchange Rate: 100 Yen/\$.
- R) d. FY92/FY93 O&MN Supplemental funds - use FY92/FY93  
Budget Rates respectively.
- R) FY93/FY94 RPMD - 2 year appropriation charging the  
current exchange rate but is not subject to SIOH.
- A) f. OICC Chinhae will use the following exchange rates:  
797.45 Won/Dollar (MILCON & Family Housing)  
811.69 Won/Dollar (O&M)



5. Funding Documents. The OICC primarily accepts four types of funding documents, the NAVCOMPT 2276, DD Form 1149 and 448, and the OA.

a. NAVCOMPT 2276 - Used by Navy and Marine Corps customers. It authorized the OICC to direct cite the funds of the customer.

Note: If the customer must pay SIOH, then it is provided on a separate document (NAVCOMPT 2275) issued to the OICC Far East office. (R)

b. DD Form 1149 - Used by afloat units. Units authorized to use the 1149 for procurement will cite an "R" vice an "N" as the first character of the UIC.

c. DD Form 448 (MIPR) - Used by customers outside Navy and Marine Corps. Since they are non-Navy, SIOH will be charged. A major change from previous policy now allows the awarding OICC to accept the document as a direct cite just as if it was a NAVCOMPT 2276. Enclosure (1) provides a sample of the MIPR and a MIPR acceptance (DD Form 448-2). Another change is that, for most of our customers, the amounts will be at the budget rate. See the chart at paragraph 3c.

d. NAVFAC Form 7300/12 (OA) - The procedure listed in enclosure (2) describe the actions that the Program Managers (PM) must take when certain types of funds are being requested. OAs will be used for MILCON, Housing, or Non-appropriated funds. Since MILCON and Housing funds come from PACDIV, the PM will request the funds accordingly. However, for Non-appropriated funds, the document will be received from customer at the contracting office. The funding document must then be forwarded to the PM who initiate the process described in enclosure (2).


## 6. Action

a. OICC Far East staff members and field office OICCs/ROICCs will cite the applicable Currency Exchange Rates to contracts and prospective contracts and shall indicate the contract amount in yen and the dollar requirement on all requests for reservation of funds and contract awards. Contracting Officers and Program Managers are authorized to accept funds. The acceptance should clearly state the terms of the acceptance (budget or current) similar to enclosure (1).

b. OICCs administering Current Exchange Rate contracts shall conduct periodic reviews of the actual cost incurred through contract payments to assure sufficient funds are available for the remaining payments. The customers should be apprised on all excesses available for recapture.

OICCFEINST 7100.1I  
13 Sep 93

- c. For budget execution rate contracts the disbursing officers will calculate and charge or credit the variance between the budget rate and the current rate to the full line of accounting classification data applicable to the CMOB/CMA for the appropriation concerned. Voucher for Disbursement and/or Collection (NAVCOMPT Form 2277) will be prepared to reflect two Transaction Type Codes (TTC).
- R) TTC 2S - 1st line of accounting, amount of the invoice chargeable at the budget rate.
- R) TTC 2X - 2nd line of accounting, amount of variance amount chargeable to CMOB/CMA.

  
G. E. REYNOLDS  
Deputy

Distribution:  
OICCFEINST 5216.1S  
Lists I, III, and IV  
PWC (Code 150)  
PWC (Code 200)  
PWC (Code 425, 426)  
PWC (Code 700)  
NPPS Det Yokosuka

copy to:  
PACNAVFACENGCOM  
OICC FE (Codes 021)

# SAMPLE

## MILITARY INTERDEPARTMENTAL PURCHASE REQUEST

Date: 29 January 1993

MIPR Number: FP3-1008

Amendment Number: BASIC

TO: (Receiving Activity)  
 COMMANDER, FLEET ACTIVITIES SASEBO  
 Attn: PUBLIC WORKS DEPT. (MR. HABE)  
 PSC 476 Box 66  
 FPO AP 96322-1160

FROM: (Issuing Activity)  
 DoD Dependents Schools - Pacific  
 Fiscal Division  
 PSC 556 Box 796  
 FPO AP 96372-0796

ISSUING ACTIVITY POC: SONOKO O'CONNEL, ACCOUNTING TECH, DSN 645-3513, FAX 645-3011

School: KING ES/HS

Project Number: EJK 42-91

Project Title: REPLACE WALL TILES, MP ROOM, B-1425

Building Numbers: 1425

Facsimile Copies To:

252-3536 - Addressee

225-3952 - DoDDS District Supt.

252-3553 - School


FUNDING FOR REMOVAL AND REPLACEMENT OF UPPER WALL AND LOWER CEILING TILES IN THE  
 MULTIPURPOSE ROOM AT BLDG. 1425, E.J.KING SCHOOL. ~~INCLUDES DESIGN COSTS.~~

Billing documents (SF1080 or other contractor bills) must be submitted for certification of services received to:  
 District Superintendent, Japan/DoD Dependents Schools, Pacific/Attention: Business Manager/APO AP 96328-0005.  
 Payment will be made by the Accounting and Finance Office serving the certifying office. The above MIPR number  
 and ISA number must appear on all billing documents submitted to this office. The bills must indicate costs by  
 separate ISA category of support requested in this MIPR.

Basic: (01/29/93)

60,000.00

ENDORSED IN FULL AMOUNT TO OICC SASEBO.

  
 B. K. LOVELESS, LCDR CEC USN.

# SAMPLE

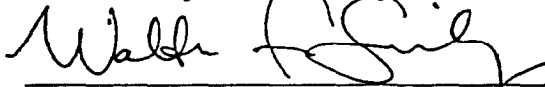
Funds for procurement are properly chargeable to the allotment set forth below, the available balances of which are  
 sufficient to cover the estimated total price.

973/40131.6006 P6200 5181 2525 FP3-1008 S94390  
 973/40131.6066 06 6666 666666

\$ 60,000.00

BUDGET RATE: \$1 = ¥ 130.11

Authorizing Officer's Signature

  
 WALTER F. SMILEY, BUDGET OFFICER

29 January 1993

### ACCEPTANCE OF MIPR

To accept the above MIPR complete the following items or a separate DD Form 448-2 and return to the issuing activity:

The above MIPR is accepted and the items requested will be provided as follows:

- All items will be provided through reimbursement (Category I).
- All items will be procured through the direct citation of funds (Category II). Submit DD Form 1155.
- Items will be provided by a both Category I and Category II as indicated below.
- This acceptance for Category I items is qualified because of anticipated contingencies as to final price.
- Changes in this acceptance figure will be furnished periodically upon determination of definitized prices but prior to submission of billings.

Funds Data (check if applicable)

Additional funds in the amount of \$ \_\_\_\_\_ are required.

 Funds in the amount of \$ 19,019.41 are not required and may be withdrawn.

Remarks: N62836-93-D-6013

FUNDS ACCEPTED AT THE BUDGET RATE/CURRENT RATE.

Contract amount	¥4,960,000	\$38,121.59	- CATEGORY II
SIOH cost (7.5%)	372,000	2,859.00	- CATEGORY I
	¥5,332,000	\$40,980.59	

Receiving Activity POC: Name F. H. CARTER Tel 252-3338 Fax 252-3769Name and Title of Authorizing Officer T. KATAGIRI, Contracting Officer Signature T. Katagiri

Date

T. KATAGIRI, Contracting Officer23 APR 1993

7 Aug 1991

REVISED on 10 September 1993

Subj: STANDARD OPERATING PROCEDURES (SOPS) FOR THE  
ADMINISTRATION AND CONTROL OF FUNDS GRANTED TO OICC FAR  
EAST

Ref: (a) Military Construction Financial Management Handbook  
(NAVSOP-1570) par. 3203 (Commitments)  
  
(b) Federal Acquisition Regulation (FAR) Subpart 43.105  
(Availability of Funds)

1. Purpose. This SOP establishes responsibility, prescribes procedures, and provides information regarding the administration and control of funds granted to OICC Far East in accordance with references (a) and (b).

2. Background. OICC Far East consists of OICC Far East Headquarters (HQ) (Yokosuka, Japan) and seven subordinate OICCs/ROICCs located throughout Japan and Korea (see Attachment (1)). Because of this, the administration and control of funds granted to OICC Far East becomes very critical to ensure that adequate funds are available for the execution/completion of authorized projects. Reference (a) states that a commitment is a reservation of funds to indicate an amount administratively earmarked for future obligations based upon procurement directives, orders, requisitions or requests, or other documents of procurement, which have the effects of directing or causing obligations to be incurred or created in the future. EFD controlled commitments will be issued for contract work, collateral works and other purposes as required by using the Obligation Authority (OA) (NAVFAC Form 7300/12). Reference (a) further states that the OA when properly approved becomes the authority for officials within the EFD to prepare obligation documents for signature without further approval and that the use of the OA is an important step in assuring the availability of funds. Reference (b) states that the contracting officer shall not execute a contract modification that causes or will cause an increase in funds without having first obtained a certification of fund availability.

3. Scope. The provisions of this SOP apply to all: (a) personnel authorized to incur commitments, obligations, and expenditures against authorized funds, and (b) funds in OICC Far East "E" file in support of contracts to be awarded by OICC Far East.

4. Responsibility. Various types of funds are granted to OICC Far East. Except for funds received as Other Direct Cite (ODC), PACNAVFACENGCOM Director, Programs and Budget (Code

013) and the Director Financial Services Division (Code 014) are the Fund Administrators. OA's will be requested and approved by the responsible codes (s) prior to the obligation of any funds. Responsible codes (s) for requesting and approving OAs by fund type will be as follows (all codes/ designated Program Managers (PMs) refer to PACNAVFACENGCOM except for Reimbursable Work (note 2)):

<u>Fund Type</u>	<u>OA Requested by</u>	<u>OA Approved by</u>
R) Military Construction (MILCON)	Code 50	Code 014
R) Family Housing, Navy - MILCON	Code 08	Code 014
R) Family Housing, Navy - O & M	Code 08	Code 013
R) Centrally Managed Funds - OM & N	designated PM 1	Code 013
R) Other Procurement, Navy (OPN)	designated PM 1	Code 013
R) Reimbursable Work	(2)	Code 014

Notes -

(1) The designated PM will be determined by the type/purpose of the funds. For example, a PM from the Environmental Branch (Code 114) would be designated to administer the Defense Environmental Restoration Account.

R) (2) OICC Far East Code 90 and Code. 50.

5. Procedures (Other than for Reimbursable Work)

Part A (Update to MCON Program Status Report) of the OA (see Attachment (2)) will be completed by the responsible code and the OA forwarded to either Codes 013 or 014 (as applicable) for approval.

b. Part B (Obligation Authority Granted) of the OA will be completed/approved by Codes 013/014 (as applicable) confirming that funds are available and annotating the line(s) of accounting data and amount(s). If funds are not available, the requester of the OA will be informed of this condition immediately. If applicable, Transportation Account Codes (TAC) will be noted on the OA at this time.

R) c. A copy of the approved OA will be forwarded to the requester; whereas, the original will be forwarded to the applicable contracting officer (OICC Far East Code 02, field office Code 02, or PACNAVFACENGCOM Code 02) confirming that funds are available prior to awarding the contract and obligation of funds.

d. A completed OA is provided as Attachment (2).

e. No other documents need to be completed and used in conjunction with the OA.

6. Procedures (Reimbursable Work)

a. Applicable funding documents received in support of contract work to be awarded by OICC Far East will be accepted by OICC Far East HQ. OICC Code 50 will be prepare OA, and forwarded to PACNAVFACENGCOM Code 014. (R)

b. Part A of the OA will be completed by the responsible code for OICC Far East. This OA will be assigned a number logged in at OICC Far East prior to forwarding to PACNAVFACENGCOM Code 014 for approval. The log will be closely monitored to ensure that all outstanding OAs are accounted for and appropriate action(s) are taken.

c. Part B of the OA will be completed/approved by PACNAVFACENGCOM Code 014 confirming that funds are available and annotating the line(s) of accounting data and amount(s). If funds are not available, the requester of the OA will be informed of this condition immediately. If applicable, TAC will be noted on the OA at this time.

d. The approved OA will be forwarded to OICC Far East HQ; thereby, allowing the contract to be awarded.

e. Immediately after award of the contract, OICC Far East will forward a signed copy of the award documents to PACNAVFACENGCOM Code 014 who in turn, will obligate the funds for this transaction..

f. No other documents need to be completed and used in conjunction with the OA.

g. A completed OA is provided as attachment (3). (A)

OICC Far East

OICC/ROICC Okinawa (Okinawa, Japan)  
OICC/ROICC Misawa (Misawa, Japan)  
OICC/ROICC Iwakuni (Iwakuni, Japan)  
OICC/ROICC Sasebo (Sasebo, Japan)  
OICC/ROICC Atsugi (Atsugi, Japan)  
OICC/ROICC Kamiseya (Kamiseya, Japan)  
OICC/ROICC Chinhae (Chinhae, Korea)

Enclosure (2)  
Attachment (1)







## APPENDIX R: IBOP PROCEDURES

1. International Balance of Payments (IBOP) Guidance: OICC FE Memorandum 90-006 of 21 May90



DEPARTMENT OF THE NAVY  
OFFICER IN CHARGE OF CONSTRUCTION  
NAVAL FACILITIES ENGINEERING COMMAND CONTRACTS, FAR EAST  
BOX 61  
FPO SEATTLE 98762-3100

90/CAR/2533E  
21 MAY 1990

MEMORANDUM: OICC FE 90-006

From: OICC Far East  
To: Distribution

Subj: INTERNATIONAL BALANCE OF PAYMENTS

Encl: (1) IBOP Procedures of 23 Apr 90 (English)  
(2) IBOP Procedures of 23 Apr 90 (Japanese)

1. In implementing these latest IBOP and shipping rules, I want to emphasize that it's finally the contracting officer who must know the outcome of the IBOP calculations by the cost estimators and it must be in the contract file. I have included a forwarding memo to deliver the Government estimate (complete: not a summary) to the contracting officer so the contract can be correctly assembled. Planned or normal will dictate which clauses to include. Item 3 is necessary because, even if normal procedures are used and any U.S. material is required, we still must include the U.S. shipping clauses.

2. In doing the cost estimates, the most accurate cost data for imported items will be from a local trading company. However, you must use them carefully because they will quickly tire of your calls when they don't get much business. Use the historical data you already possess, and also the cost estimators from PWC Yokosuka will gladly provide the latest data they have.

3. We are working with Military Sea Lift Command (MSC) in Yokohama on U.S. Shipping prices and whether or not we can get blanket waivers due to cost. Don't wait for us on implementing the procedures, but we will aggressively pursue these issues with MSC. Any relief we can get will be immediately passed along.

  
C. A. RICE  
Deputy

Distribution:  
OICCFEINST 5216.IP  
List III  
PWC Yokosuka Code 200, 400  
OICC FE Code 02, 021

copy to: (w/o encls)  
OICC FE Codes 021.1, 021.2, 021.3, 021.5, 021.6

MEMORANDUM

From: OICC Far East

Subj: INTERNATIONAL BALANCE OF PAYMENTS (IBOP) PROCEDURES

Ref: (a) Federal Acquisition Regulations (FAR) Part 25 and DOD  
Federal Acquisition Regulations Supplement (DFAR) Part  
225  
(b) COMNAVFORJAPANINST 4230.15 Series  
(c) MIL-HDBK-1010/1, Cost Engineering; Policy and  
Procedures dtd 16 Oct 89  
(d) DOD Federal Acquisition Regulations Supplement (DFAR)  
Part 247

Encl: (1) Planned Procedure for IBOP Analysis  
(2) Procurement of CONUS Materials  
(3) IBOP Analysis Procedure  
(4) IBOP Sample "A"  
(5) IBOP Sample "B"  
(6) Government Estimate Cover Sheet  
(7) USFJ Form 380EJ; Customes Free Import or Export of  
Cargo or Customs Declaration of Personal Property

1. Reference (a) states the following.

For construction, repair, and maintenance of real property contracts outside the United States, U.S. Materials and Equipment (U.S. Domestic End Products) will be furnished, only when the cost of the U.S. Items (U.S. Domestic End Products including costs associated with transportation, handling and installation) does not exceed the cost of acceptable foreign items (foreign country end products; non-U.S. material), plus 50%. Part 225.302 of reference (a) states that the IBOP evaluation is normally accomplished in the estimating process prior to solicitation.

"Domestic End Product" means U.S. material.

"Foreign End Product" means non-U.S. material.

2. Reference (a) provides for the following exceptions for our work.

a. "Small purchases-aquisitions by contracting officers located outside the United States (Japan), which are estimated not to exceed \$25,000 in foreign cost.

b. Materials concerning "maintenance and repair of foreign-made vehicles, equipment, machinery and systems"

subj: INTERNATIONAL BALANCE OF PAYMENTS (IBOP) PROCEDURES

c. "The following bulk construction materials: sand, gravel and other soil materials, stone, concrete masonry units and fired brick".

d. "Ready mixed asphalt and portland cement concrete" provided that foreign cost is estimated not to exceed \$10,000.

3. U.S. Army Corps of Engineers, Japan District (Camp Zama) provides for the following additional exceptions which we will also use:

- a. Aggregates (sand, stone; etc.)-partly covered in par. 2
- b. Portland Cement
- c. Concrete Products (blocks, piles, poles, etc.)-partly covered in par. 2
- d. Petroleum Products (asphalt, lubricating oil, etc) partly covered in par. 2
- e. Acoustical Units (including acoustical suspended ceiling system)
- f. Asphalt Roofing Felt
- g. Galvanized Iron Sheet (including precoated galvanized steel sheet; flat, corrugated and ribbed, prefabricated materials those are mainly consisted of galvanized steel/iron sheet -- example; ducts for HVAC and roof ventilators/louvers for natural ventilation)
- h. Glass, Clear, (including wired glass and framed glassdoors/glazed aluminum sashes)
- i. Gypsum wall Board
- j. Insulation Board: mineral wool
- k. Insulation: glasswool
- l. Plywood
- m. Structural Steel Shapes
- n. Tile: ceramic (including mosaic)
- o. Tile: vinyl asbestos
- p. Electrical Conduit, rigid steel including communication conduit, and conduit fittings
- q. Conduit (for electrical distribution-underground), and Conduit Fittings
- r. Sheet Metal Outlet Boxes
- s. Reinforcing Steel
- t. Steel Plates

4. References (a) and (b) additionally allow for other exceptions such as "unreasonable cost". This exception would apply where the analysis requires domestic end products but urgency demands use of the "unreasonable cost" foreign end product.

5. We must be critical of our analysis to justify our choice of material procurement. IBOP will be prepared for each project above \$25,000. Estimates for MCON's, Step II's and locally funded

Subj: INTERNATIONAL BALANCE OF PAYMENTS (IBOP) PROCEDURES

projects above \$25,000 will be provided in such way that local and CONUS procured materials, and their respective costs based on the results of IBOP analysis, are readily identified in the Cost Estimate Sheet; NAVFAC 11013/7 (I-78): Then, everyone will be able to understand the project execution costs.

Procedures for preparing CONUS material and price list are shown in enclosure (1). Enclosure (2) describes how local contractors procure CONUS products (example only).

6. If IBOP analysis recommends use of CONUS materials, project specifications must be prepared for their incorporation.

Close coordination will be required among designers, cost estimators and specifications writers for expeditious determination of planned or normal procedure for timely completion of locally funded projects.

7. One-of the most important things of IBOP analysis is to know the accurate prices of the CONUS materials and compare those prices with the prices of the comparable Japanese materials.

To minimize duplication of price investigations of CONUS materials, each design branch must designate an engineer in charge of IBOP analysis in preparing unit price table. of course, the Cost Engineering Branch is ultimately responsible for IBOP analysis. Reference (c) can be used for general guidance.

8. Enclosure (6) will-be used as the cover sheet for all government estimates requiring IBOP analysis (value greater than small purchase).

C. A. RICE

Distribution:  
OICCFEINST 5216.1P  
List III

## PLANNED PROCEDURE FOR IBOP ANALYSIS

1. Whenever CONUS material is required in a project for IBOP analysis (excluding materials which are regarded as exception by the DOD-FAR and the Japan District Engineer), following procedure shall be used.

a. Go to a local trading company for quotation; this is the most accurate price. Ensure the local trader understands that reference (d) requires U.S. flag vessels for shipping.

b. If that fails, the task is laborious, as indicated below, and the result less accurate. Try Means Estimating Handbook, MacMaSter Supply Book, PWC Code 800 or other available source to obtain the price in the United States then determine the price at the construction site including the costs of transportation and handling.

Following items are considered as guides to determine the contractor's price of the CONUS material that is procured from the United States to the construction site against the price in the United States.

(1) Use list price, without discount, as the local contractors in Japan will not normally qualify as preferred customers.

(2) For material cost of a line item less than \$1,000, use mark-up of 300% (including contractor's overhead and profit).

(3) For material cost of a line item more than \$1,000, use mark-up between 220% and 280% depending on conditions listed below;

(a) Items requiring custom made order will be more costly; off-the shelf items will be less costly.

(b) Fragile items requiring special handling will be more costly (for ocean/air freight, paint and oily products are required to be contained in the special containers designated and also additional charge for transportation will be required by the reason of flammable materials).

(c) Items requiring early delivery - especially air freight - will be more costly.

(d) Items requiring shop drawing, catalog cut or sample submittals, will be more costly.

(e) Items requiring on-site adjustment will be more costly because contingency for additional parts/lengths must be included.

Enclosure (1)

(f) Items requiring much of our time to obtain price will be costly because local contractors will have similar problems, and they will insert conservative figure in their bid.

2. Because CONUS materials are bought with dollars, conversion to yen must be performed at the-current rate.



PROCUREMENT OF CONUS MATERIALS  
(EXAMPLE ONLY)

1. As a general rule, procedure used by the local construction contractor who must procure CONUS materials for the NAVY project is as follows:

Contractor contacts local trading company (many Japanese local trading companies do business for limited kinds of materials.). Because quantity normally associated with our projects is small, large Japanese trading companies do not get involved.

b. After research, local trading company places an order to a counterpart supply company in the United States. If available information is not sufficient for an order, request is made to Material Supplier in the United States to look for an item meeting the project requirements.

c. The material supplier in the United States contacts various manufacturers for quotation and places an order on the lowest offer.

The amount requested by the material supplier in the United States for the CONUS material includes followings:

- (1) Material cost negotiated with manufacturer
- (2) Air/ocean freight charge including currency adjustment factor
- (3) Yard handling charge
- (4) His handling charge

In this case, the Japanese trading company cannot know the actual price negotiated, because the material supplier does not show actual price on his bill.

d Once off-loaded, the Japanese local trading company receives material at Haneda/Narita/Yokohama and delivers to the construction contractor at the construction site after completion of regal paperwork for custom office.

The amount requested by the Japanese local trading company to the construction contractor for the CONUS material includes the following:

- (1) All costs described in paragraph c.
- (2) Yard handling charge including storage (in Japan)
- (3) Custom charge including miscellaneous legal paperwork. There is no custom duty on imported property for use on our projects but there will likely be some fees for customs processing, enclosure (7).
- (4) Transportation cost from yard to the job site
- (5) His handling charge

e. Now we have to remember that the construction contractor will add his costs of overhead and profit for the costs described in paragraph c. and d. in his bid. The following gives you an idea of what charges are in the importer's estimates and of the amount of detail necessary if you cannot use an importer for your estimate.

f. Generally speaking, the costs except material cost concerning the CONUS materials from the United States to the job sites based on recent investigations are as follows.

(1) Transportation Fee:

(a) Air Freight from Los Angeles to Narita.

up to 45 kg in weight	\$6.90/kg	(minimum cost - \$50.00)
up to 100 from 45 kg	4.63/kg	
up to 300 from 100 kg	3.64/kg	
over 300 kg	3.31/kg	

(There are 2 ways for cost for air freight, by weight and by cubic content; 366 cubic inches = 1 kg, and the higher cost will be applied.)

In addition, a minimum \$8.00 for yard charge and a minimum \$20.00 for currency adjustment factor will be charged by air transportation companies.

A minimum air freight charge:

Base freight charge	\$50.00
Yard handling charge	8.00
Currency adjustment factor	20.00
Total	\$78.00

(b) Ocean Freight: from Oakland to Yokohama

Ocean freight charge is determined by cubic content, and normally treated by Container bases.

20 feet container; (5.933M X 2.354M X 2.409M - 33.65 CM)  
 40 feet container; (12.06M X 2.343M X 2.383M - 67.36 CM)

	<u>20 feet Container</u>	<u>40 feet Container</u>
Base Charge	2,540	8,770
Currency Adjustment Factor	26 %	26 %
Fuel Adjustment Factor	\$ 48.00	\$ 48.00
Receiving Charge	\$325.00	\$360.00
	<u>\$3,573</u>	<u>\$5,158</u>

(Commodity = generators and air conditioning equipment)

Above charges/expenses could be charged depending on the case. It is very hard to estimate the cost of the CONUS materials of Small quantities because the trading company packages with other materials for import. Again, the quotation of the trading company is the most accurate price.

## IBOP ANALYSIS PROCEDURE

1. For preparations of MCON; DD 1391, Step II of Special Projects and Design Stages of the locally funded projects above \$25,000, we have to execute the IBOP Analysis. The procedure of the IBOP Analysis is as follows.

- 1-a. Planning in outline
- 1-b. Determination of work scope
- 1-c. Preparation of rough cost estimate
- 1-d. Execution of IBOP Analysis

The following explanation is keyed to the sample cost estimates on enclosures (4) and (5). Remember cost of material is cost to the contractor.

a. Whenever we have to buy CONUS materials because of U.S. Navy Criteria or Technical/Engineering Reasons, mark "US" next to each item on the cost Estimate Sheet; NAVFAC 11013/7 (I-78) for those materials, and estimate those as U.S. materials.

b. For the materials which are exempted by DOD, FAR or the Japan District Engineer and required Japanese materials by Technical/Engineering Reasons, mark "LOCAL" next to each item on the estimate sheet and estimate them as Japanese materials.

c. For the materials which do not belong in the above categories described in para. 2a. and 2b, we have to proceed as follows:

(1) If the cost of CONUS material is at or below the cost of acceptable Japanese material, we must buy the CONUS material, and proceed same as 2a.

(2) If the cost of CONUS material is higher than the cost of acceptable Japanese material, mark "\*" next to each item on the estimate sheet, and put both costs with the cost of CONUS materials in parenthesis. The materials marked "\*" LOCAL are the Foreign Exchange Cost (FEC).

d. After completion of preparation of cost estimate, we can have the two total project costs. The difference between them is caused from differences of the costs of the materials marked "\*".

"Planned procedure" project cost means buying all CONUS materials except those exempted from IBOP (using enclosures (4) and (5), "US" + "\*CONUS" + L). Normal procedure. project cost means buying only those U.S. materials that are required by specification or are cheaper than local materials. Everything else is local (using enclosures (4) and (5), "US" + "\*LOCAL" + L).

e. Use only local labor costs in execution of IBOP ANALYSIS.

3. "IBOP ANALYSIS" must be done using the Cost Estimate Sheet 11013/7 (1-78).
4. Execution of IBOP ANALYSIS

- a. A format of IBOP analysis

IBOP	NORMAL PROCEDURE	PLANNED PROCEDURE	CHANGE
CWE	A	B	C
FEC	D	E	F

- b. The amount of the total project cost using normal procedure will be put in "A" column.

The amount of the total project cost using planned procedure will be put in "B" column.

The difference between the amounts in columns "A" and "B" will be put in "C" column.

Delete the costs of all U.S. materials from the amount of "A" column and put it in "D" column (Materials marked "US"),

Delete the costs of all U.S. materials and all parenthesized material costs from the amount of "B" column and put it in "E" column (Materials marked "US" + "\*CONUS").

The difference between the amounts in column "D" and "E" will be put in "F" column.

- c. On the "IBOP ANALYSIS FORMAT", CWE (current working estimate) means-a simple comparison of costs between planned procedure and normal procedure (total project cost of planned procedure is higher).

On the other band, FEC (foreign exchange cost) means that a simple comparison of costs of all Japanese materials and labor between planned procedure and normal procedure.

- d. The last step of IBOP analysis procedure is to compare amount in "C" and 50% of amount in "F" columns.

The amount in "C" column is the increased U.S. Dollars caused by using CONUS materials in lieu of the Japanese materials for materials marked "\*".

The amount in column "F" is considered as the U.S. dollar to be paid by foreign currency by using Japanese materials for materials marked "\*".

IBOP reminds us that U.S. materials will be furnished when the cost of U.S. materials does not exceed the cost of the acceptable Japanese materials plus 50%. Therefore;

If the amount in column "C" is less than 50% of the amount in "F", this project must be executed in the PLANNED PROCEDURE, and this means that the CONUS materials must be applied for all materials marked "\*".

On the other hand, if the amount in column "C" exceeds 50% of the amount in "F" column, this project must be executed in the NORMAL PROCEDURE, and this means that the Japanese materials must be applied for all materials marked "\*".

ACTIVITY AND LOCATION: **IBOP SAMPLE "A"**

CONSTRUCTION CONTRACT NO. \_\_\_\_\_

IDENTIFICATION NUMBER \_\_\_\_\_

ESTIMATED BY \_\_\_\_\_

CATEGORY CODE NUMBER \_\_\_\_\_

PROJECT TITLE: **ROLL-A-WAY COVER, SEASIDE SWIM. POOL**

STATUS OF DESIGN:  PRELIM  20%  50%  FINAL  OTHER (Specify) **STEP II**

JOB ORDER NUMBER \_\_\_\_\_

ITEM DESCRIPTION	QUANTITY		MATERIAL COST		LABOR COST		ENGINEERING ESTIMATE	
	UNITS	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
L. CONC. FOUNDATION	35	M <sup>3</sup>	40,000	1,400,000	60,000	2,100,000		2,240,000
* POOL COVER	364	M <sup>2</sup>	100,000 (148,000)	36,400,000 (52,872,000)	60,000	21,840,000		58,240,000 (75,712,000)
L. ALUM. DOOR	2	EA	50,000	100,000	20,000	40,000		140,000
* MODIFY FENCE	20	M	20,000 (24,000)	400,000 (480,000)	20,000	400,000		800,000 (880,000)
U.S. PROVIDE STEAM PIPE	160	M	20,000	4,800,000	20,000	3,200,000		8,000,000
* REPLACE TEMP. CONTROLL SYSTEM	1	EA	40,000 (80,000)	40,000 (80,000)	10,000	10,000		50,000 (90,000)
* PROVIDE O.A. SUPPLY BLOWER	1	EA	200,000 (210,000)	200,000 (210,000)	50,000	50,000		250,000 (260,000)
W/HEATING COIL, SUPPORT								
L. PROVIDE DOCT INSULATION	10	M <sup>2</sup>	3,000	30,000	1,000	10,000		40,000
U.S. PROVIDE UNIT HEATER	4	EA	21,000	84,000	5,000	20,000		104,000
* PROVIDE ELEC PANEL	2	EA	40,000 (82,000)	80,000 (164,000)	5,000	10,000		90,000 (198,000)
L. PROVIDE ELEC CONDUIT PIPE & WIR'G	540	M	2,000	1,080,000	1,000	540,000		1,620,000
* LIGHT FIXTURES	6	EA	20,000 (40,000)	120,000 (240,000)	2,000	12,000		132,000 (252,000)
L. FITTING & MISC.	1	LS	100,000	100,000	20,000	20,000		120,000
L. SCAFFOLDING	600	M <sup>2</sup>	0	360,000	1,200	720,000		1,080,000
<b>TOTAL PROJECT COST</b>								<b>72,906,000</b> <b>90,636,000</b>

IBOP SAMPLE "A"

IBOP	NORMAL PROCEDURE	PLANNED PROCEDURE	CHANGE
CWE	\$ 72,906,000	\$ 90,636,000	\$ 17,730,000
FEC	\$ 58,072,000	\$ 30,782,000	\$ 27,290,000

OR (C # J35/S)

IBOP	NORMAL PROCEDURE	PLANNED PROCEDURE	CHANGE
CWE	\$ 540,040	\$ 671,380	\$ 131,340
FEC	\$ 503,870	\$ 228,020	\$ 275,850

$\$ 131,340 < \$ 157,925 = \$ 275,850 \times 0.5$

By above analysis, we have to apply "Planned Procedure".

STANDARD FORM NO. 101-107 (Rev. 10-6-76) GSA FPMR (41 CFR) 101-11.6 and 101-11.7	<b>COST ESTIMATE</b>	DATE PREPARED	SHEET OF
ACTIVITY AND LOCATION <b>IBOP SAMPLE "R"</b>	CONSTRUCTION CONTRACT NO.	IDENTIFICATION NUMBER	
PROJECT TITLE <b>ROLL-A-WAY COVER, SEASIDE SWIM. POOL</b>	ESTIMATED BY	CATEGORY CODE NUMBER	
	STATUS OF DESIGN <input type="checkbox"/> PREL <input type="checkbox"/> 30% <input type="checkbox"/> 50% <input type="checkbox"/> FINAL <input type="checkbox"/> Other (Specify) <b>STEP II</b>	JOB ORDER NUMBER	

ITEM DESCRIPTION	QUANTITY		MATERIAL COST		LABOR COST		ENGINEERING ESTIMATE	
	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
L. CONC. FOUNDATION	35	M <sup>3</sup>	40,000	1,400,000	60,000	2,100,000		2,740,000
* POOL COVER	364	M <sup>2</sup>	100,000 (160,000)	36,400,000 (57,240,000)	60,000	21,840,000		58,240,000 (80,080,000)
L. ALUM DOOR	2	EA	50,000	100,000	20,000	40,000		140,000
* MODIFY FENCE	20	M	20,000 (24,000)	400,000 (480,000)	20,000	400,000		800,000 (880,000)
U.S. PROVIDE STEAM PIPE	160	M	30,000	4,800,000	20,000	3,200,000		8,000,000
* REPLACE TEMP. CONTROLL SYSTEM	1	EA	40,000 (80,000)	40,000 (80,000)	10,000	10,000		50,000 (90,000)
* PROVIDE O.A. SUPPLY BLOWER W/HEATING COIL, SUPPORT	1	EA	200,000 (210,000)	200,000 (210,000)	50,000	50,000		250,000 (260,000)
L. PROVIDE DUCT INSULATION	10	M <sup>2</sup>	3,000	30,000	1,000	10,000		40,000
U.S. PROVIDE UNIT HEATER	4	EA	21,000	84,000	5,000	20,000		104,000
* PROVIDE ELEC PANEL	2	EA	40,000 (44,000)	80,000 (88,000)	5,000	10,000		90,000 (98,000)
L. PROVIDE ELEC CONDUIT PIPE & WIR'G	540	M	2,000	1,080,000	1,000	540,000		1,620,000
* LIGHT FIXTURES	6	EA	20,000 (40,000)	120,000 (240,000)	2,000	12,000		132,000 (252,000)
L. FITTING & MISC.	1	LS	100,000	100,000	20,000	20,000		120,000
L. SCAFFOLDING	600	M <sup>2</sup>	600	360,000	1,200	720,000		1,080,000
<b>TOTAL PROJECT COST</b>								<b>¥ 172,906,000</b> <b>( ¥ 195,004,000 )</b>

SA 888-0-00-000

IBOP SAMPLE "R"

<b>IBOP</b>	NORMAL PROCEDURE	PLANNED PROCEDURE	CHANGE
CWE	¥ 72,906,000	¥ 95,004,000	¥ 22,100,000
FEC	¥ 68,022,000	¥ 30,782,000	¥ 37,240,000

OR (¥:135/\$.)

<b>IBOP</b>	NORMAL PROCEDURE	PLANNED PROCEDURE	CHANGE
CWE	\$ 540,040	\$ 703,730	\$ 163,700
FEC	\$ 503,870	\$ 228,020	\$ 275,850

$\$ 163,700 \times 0.5 = \$ 81,850$

By above analysis, we have to apply "Normal Procedure".



MEMORANDUM

From: (Engineering)  
To: (Contracts)

Subj: GOVERNMENT ESTIMATE (GE)

Encl: (1) GE dtd \_\_\_\_\_

1. The government estimate attached is forwarded,

CONTRACT NUMBER N62836-\_\_ -C- \_\_

TITLE \_\_\_\_\_

2. IBOP ANALYSIS

ITEM/COST	NORMAL (Local material)	PLANNED (U.S. material)	DIFFERENCE
CWE			(A)
FEC			(B)

(A)/(B) = \_\_\_\_\_

(A)/(B) EQUAL TO OR LESS THAN 0.5 USE PLANNED PROCEDURE

(A)/(B) GREATER THAN 0.5 USE NORMAL PROCEDURE

\_\_\_\_\_ PROCEDURE WILL BE USED FOR THE PROCUREMENT

3. \_\_\_\_\_, (Yes or No) U.S. materials have been specified for some specialized requirements.

\_\_\_\_\_  
APPROVED SIGNATURE

\_\_\_\_\_  
DATE

Enclosure (6)

**CUSTOMS FREE IMPORT OR EXPORT OF CARGO  
OR CUSTOMS DECLARATION OF PERSONAL PROPERTY**

(Authority: USFJ Policy Letter # 11-12)

税関輸出入無税或は  
私有物関税申告書  
(様式: 在日米軍ポリスィー レター 第 11-12)

For  
目的  **IMPORT** 輸入  **EXPORT** 輸出 (Check applicable box) (相当欄に印をつけよ)

(Check Applicable Box) (相当欄に印をつけよ)

BY  **United States Armed Forces** 米国軍隊  
 **Authorized Procurement Agency** 認可調達機関  
 **Non-Appropriated Fund Activity** 非承認予算機関

FOR USE OF (Check applicable box)  
使用目的 (相当欄に印をつけよ)

**Official Use by the United States Armed Forces** 米軍公用

**United States Forces Personnel** 米軍要員

Identifying Marks & Numbers 識別記号及番号	Units 単位	Quantity 数量	Weight 重量	DESCRIPTION* (If Automobile, include Chassis & Engine No.) 明細 (自動車の場合は車台及エンジン番号を含む)	Value* 価格
<p>FROM: TELEDYNE ENERGY SYSTEMS 110 W. TIMONIUM RD. TIMONIUM, MD. 21093</p> <p>TO: U.S. NAVY/MCB CAMP FUJI ATTN: M.F. TAKAKI/Mr. James Knepler</p> <p>AWEL NO: 205-8501 0332 HOUSE AFB NO: 31166855 FLT NO. : ALL NIPPON AIRWAYS FLIGHT 005 POE: SAN FRANCISCO INT'L AIRPORT POD: NEW TOKYO INT'L AIRPORT (NARITA)</p>	PC	1	90.6 KG	THERMOELECTRIC GENERATOR SERIAL 6060	N. C. V.

\* Not Required for U.S. Military Cargo 米軍軍用貨物は不要

CONTINUATION 続き					
Identifying Marks & Numbers 識別記号及番号	Units 単位	Quantity 数量	Weight 重量	DESCRIPTION* (If Automobile, include Chassis & Engine No.) 明細 (自動車の場合は車台及びエンジン番号含む)	Value 価格

\* Not Required for U.S. Military Cargo 米軍軍用貨物は不要

CARGO CERTIFICATION 積荷証明		PERSONAL PROPERTY CERTIFICATION 私有物証明	
<p>This certifies that the material, supplies and/or equipment identified above, for shipment as marked, are for the exclusive use as indicated. 上記資料、供給品及び/或は備品は記号通りの積出しのみ指示された通りの専用用途の物であることを証明する。</p>		<p>1. The undersigned certifies that he is a member of the United States Forces or an employee of a Contractor, as defined in USFJPL 11-12, and that the above listed property is imported by me for the personal use of myself (or my dependents) and that such property will not be disposed of to persons or agencies not accorded the benefits of the Status of Forces Agreement except as authorized by regulations. 2. I further certify that my personal property and personal effects contain no items or commodities prohibited by USFJPL 11-12.</p>	
<p>Signature 署名 <b>J. R. RYAN</b></p>		<p>1. 下記の者は在日米軍オリスイールター 11-12 に定められている米軍の一日であるか或は業者の従業員であり、上記所有物は自己(又は本人の家族)の個人的使用のために自己により輸入し又該所有物は規定により許可されたものを除き地位協定の条項に一致しない個人或は機関に対しては処分しないものである事を証明する。 2. 私は更に私の私有物及び身の廻り品は在日米軍オリスイールター 11-12 で禁ぜられている品目又は商品を含んでいない事を証明する。</p>	
<p>Title and/or Rank 地位及び/或は階級 <b>CARGO CERTIFICATION OFFICER</b></p>		<p>Signature 署名</p>	
<p>Agency, Unit or Activity 機関部隊 <b>NSD YOKOSUKA</b></p>		<p>Rank and Title (If Applicable) 階級及地位 (若しあらば)</p>	
<p>Authenticating Officer 認証官</p>		<p>Organization (If Applicable) 団体 (若しあらば)</p>	
<p>Date 月日 <b>NOV. 6 1989</b></p>	<p>USFJ Case Number 登録番号 <b>NAY-30902-CT</b></p>	<p>NOTE: Signature, Title and Organization of Authenticating Officer must be on file with Customs House before this Authentication is valid. 注意: 認証官の署名、地位、所属は本証が有効になる前に税関に提出しておくこと。</p>	
<p>Title and/or Rank 地位及び/或は階級 <b>T. P. STATZ, LT. SC. USNR</b></p>		<p>FOR USE BY JAPANESE CUSTOMS HOUSE ONLY 日本税関の使用</p>	
<p>Agency, Unit or Activity 機関部隊 <b>U. S. FLEET ACTIVITIES, YOKOSUKA</b></p>		<p>Vessel/Aircraft 船舶/航空機</p>	<p>Nationality 国籍</p>
<p>Origin of Goods 貨物の製造者</p>		<p>Part of Landing 上陸地</p>	
<p>Part of Shipment 積出港</p>		<p>Part of Shipment 積出港</p>	

**覚書**

発: OICC Far East

主題: **国際収支均衡計画遂行手順 (IBOP)**

参照文書: (a) Federal Acquisition Regulations (FAR) Part 25 and DOD Federal acquisition Regulations Supplement (DFAR) Part 225  
(b) CONNAVFORJAPANINST 4230.15 Series  
(c) MIL-HDBK 1010/1, Cost Engineering; Policy and Procedure dtd 16 Oct 81  
(d) DOD Federal Acquisition Regulations Supplement (DFAR) Part 247

添付文書: (1) Planned Procedure for IBOP Analysis  
(2) Procurement of CONUS Materials  
(3) IBOP Analysis Procedure  
(4) IBOP Sample "A"  
(5) IBOP Sample "B"  
(6) Government Estimate Cover Sheet  
(7) USFJ Form 380EJ; Customs Free Import or Export of Cargo or Customs Declaration of Personal Property

1. 参照文書(a)は以下の事柄を規定している。

「合衆国以外の地に於ける 不動産の建設、修理及び宮籍に拘わる契約では、合衆国産/製資材及び機器(CONUS資材)は、その価格(運賃、経費及び建設費を含んだCONUS資材の)が、(合衆国製/産資材と殆ど同等同質と見なされるが故に)採用されうる外国産/製資材の価格の 50%増しの値を超えない場合に限り使用されるものとする。」

参照文書(a) Part 225.302 は「IBOP の判定は、通常、(建設業者への)入札要請が為される以前の積算過程(Government Costの作成時)で遂行されるものとする。」と規定している。

CONUS 資材とは、合衆国内で産出若しくは製造された資材と機器を意味する。

外国産/製資材とは、合衆国以外の国で産出若しくは製造された資材や機器を意味する。

2. 参照文書(a)には、次の除外品が示されている。

- a. 外国駐在(日本)の契約官による(その地での価格が) \$25,000 未満の小規模調達。
- b. 外国製車両や機器及び機械設備の宮籍並びに修理に拘わる資材。

- c. 次のような嵩高建設資材: 砂 砂利 その他土壌製品 石材 コンクリートブロック及び煉瓦。
- d. (その地での価格が) \$10,000 未満の調合アスファルト及びポルトランド セメント  
コンクリート。

3. 合衆国陸軍工作隊 日本地区隊(Camp Zama)は、次の追加除外品を認めているので、これ等を我々の除外品リストに含めるものとする。

- a. 骨材(砂 石材等)。一部は前節に重複
- b. ポルトランド セメント。
- c. コンクリート製品(ブロック パイル ボール等) 一部は前節に重複
- d. 石油製品(アスファルト 潤滑油等)。一部は前節に重複
- e. 音響材(吸音材で構成されている吊り下げ天井システムを含む)。
- f. アスファルト ルーフイング フェルト。
- g. 亜鉛鉄板(着色亜鉛鉄板; 平、波、リップ付板、亜鉛鉄板が主要な構成材料である既製品資材; 例 エアコン システム のダクト、自然換気用のベンチレーターやルーバー 等を含むものとする)。
- h. 透明ガラス(網入りガラス、枠入りガラス等) 並びに ガラス入りアルミサッシ を含めるものとする)。
- i. 石膏ボード。
- j. 岩綿断熱材。
- k. グラスウール断熱材
- l. 合板
- m. 構造用形鋼材
- n. 磁器タイル(モザイク タイルも含めるものとする)。
- o. ビニール アスベスト タイル。
- p. 鋼製電線管、通信線管 (付属品を含む)。
- q. 電線管(地下配線用 付属品を含む)。
- r. 金属板製アウトレットボックス。
- s. 補強鉄筋
- t. 鋼板。

4. 参照文書(a)及び(b)は“根拠のない(より高価な)価格”の場合でも、除外を追加して認めている。この除外は(IBOPの)分析で、合衆国産/製資材の採用が求められているにもかかわらず、(その建設計画の)緊急必要性が、“根拠のない価格”のものであっても、外国産/製資材の採用を要求している場合に適用されるものとする。

我々の資材調達を選択を正当なものにする為、我々は その分析をより厳密にやらなければならない。 IBOP(の分析)は \$25,000 を超えるプロジェクトについて為されるものとする。 MCON's, STEP II's 及び建設費が \$25,000 を超える各部隊資金建設計画の見積もりは、外国産/製資材と合衆国産/製資材 (CONUS資材) の調達を別々にし、それぞれの見積もりが、積算書式 NAVFAC 11013(1-78) 上で、IBOPの分析の結果として、一目瞭然となるように作成されるものとする。そうすれば、誰にでも、その建設計画の実行価格が理解出来ることになる。

CONUS 資材 の選択とその価格の決定についての手順が、添付文書(1)に示されている。又、日本の建設業者が、如何にして CONUS 資材をその工事現場まで調達するかが、添付文書(2)に詳述されている(参考例のみ)。

6. もしも、IBOP の検討段階で、CONUS 資材の使用が示唆されている場合は、仕様書はそれに合致したものでなければならない。

各部隊資金建設計画を順調に完了させる為の、PLANNED PROCEDURE か NORMAL PROCEDURE かの迅速な決定の為に、DESIGNERS, COST ESTIMATORS 並びに SPECIFICATIONS WRITERS の間の密接な協力関係が希まれる。

7. IBOP の分析上での、最も重要な事柄の一つは、CONUS 資材の正確な価格を把握し、 その CONUS 資材と (同等同質とみなされるが故に) 競合されうる日本産/製資材との、公正な競合をはかることにある。

個々の品目についての調査に於ける重複を最小限に止どめる為に、各設計課は IBOP 分析の専任者を設け、(CONUS 資材の)単価表の作成とその管理を依頼する必要がある。勿論のことながら、積算課は最終的にその一切を統括することになる。参照文書(c)は、一般的なガイダンスとして使用されるものとする。

8. 添付文書(6)は、IBOP の分析を要する総ての合衆国政府の見積もり書(価格が \$25,000 を超えるもの) の表紙として使用されるものとする。

C. A. RICE

Distribution:  
OICCFEINST 5216.1P  
List III

Planned Procedure for IBOP Analysis  
IBOP 分析上での PLANNED PROCEDURE

1. IBOP の分析が要求されている建設計画で、合衆国産/製資材(以下 CONUS資材) が要求されている時はいつでも、(但し、DOD FAR 及び 合衆国陸軍工作隊 日本地区隊によって、除外品と見なされている資材を除いて) IBOPの分析が、下記の要領によって 為されなくてはならない。

a. 日本の輸入業者から見積書を取ること。これが一番正確な価格である。但し、参照文書 (d)が、それらの (CONUS 資材の) 輸送は、合衆国国籍の船舶によってなされることを、要求している事を、その貿易商社に確認させること。

b. もしも、それが出来ない時は、(それ等の材料の米国内での価格を知る為に) Means Estimating Handbook, McMaster Supply Book, PWC CODE 800 又は その他可能な情報源を活用して、合衆国内での (CONUS資材の) 価格を得ること。その後、その CONUS 資材 に対する輸送費と経費を加えて、その CONUS 資材の工事現場渡しの価格を決定すること。

以下は、合衆国内での、CONUS 資材の価格に対して、それを合衆国内で調達し 日本の工事現場へ搬入した場合の、日本の請負業者の CONUS 資材の価格を決定する際の基準である。

(1). 日本の請負業者は必ずしも、(米国産/製資材の) 上得意ではないといふ理由で、公表されている価格を、割り引きすることなく採用すること。

(2). 一連の CONUS 資材の (米国内での) 価格が、\$ 1,000 を超えない場合は、請負業者の経費と利益を考慮して (日本の工事現場での) その価格は 300% 増しとすること。

(3). 一連の CONUS 資材の (米国内での) 価格が、\$ 1,000 を超える場合は 220% から 280% 増しの間で、下記の条件にしたがって、決定すること。

(a). 特注品の価格は、(常時)在庫の規格品の価格より高い。

(b). 壊れやすい材料は、その取り扱いに注意が必要なので価格は、高くなる。  
(ペイントや油脂類の輸送は、航空/海上輸送時に、指定された容器に収められその上割り増し運賃が必要となる。)

(c). 納品を急がされる材料は価格が高く、特に航空輸送の場合はその価格は高くなる。

(d). 施工図、型録 若しくは見本品の提出が求められる資材は、価格が高くなる。

(e). 工事現場で現状に合致させるために、若干の加工が要求される資材は、追加の

部品や調節部での材料の余裕の為の臨時出費分を加算するので、価格がより高くなる。

(f). 我々が、CONUS 資材の価格(合衆国内での)の入手に、長時間を費やす資材の価格は高くなる。何故ならば、日本の請負業者も、それに対する安全経費を入札価格に加算するからである。

2. CONUS 資材はドルで調達されるので、円への換算は現行為替レートでなされるべきである。



## Procurement of CONUS Materials

### 合衆国産/製資材の調達

1. 一般に、日本の建設請負業者は、合衆国産/製資材(以下 CONUS 資材)を、合衆国海軍のプロジェクトの為に調達するには、次のような方法を探る。
  - a. 請負業者は、日本の輸入業者と(多くの場合、品種別に営業している)交渉し、その CONUS 資材 の調達を依頼する。日本の大手輸入業者は、合衆国海軍のプロジェクトの場合、その取り扱い量が少量過ぎるといふ理由で、取引に応じない。
  - b. 調達を依頼された輸入業者は、(必要品目についての)調査をした後、合衆国内の資材供給商社に発注する。その場合、資材の仕様に関して注文書に適切で十分な情報がない場合、合衆国内の資材供給商社に対して、当該建設計画の目的に適合する資材の検索を依頼することになる。
  - c. 合衆国内の資材供給商社は、諸製造業者に見積もらせた後、最低価格を申し出た製造業者と買い付け契約を締結する。

合衆国内の資材供給商社の、その CONUS 資材に対する請求書には、下記のものが含まれている。

- (1). 製造業者と契約した資材価格。
- (2). CURRENCY ADJUSTMENT FACTOR を含んだ、航空/海上輸送費。
- (3). 資材保管に拘わる構内経費。
- (4). その資材供給商社の経費。

この場合、資材価格と資材供給商社の経費が分類されていないので、日本の貿易商社は実際の資材価格を知ることが出来ない。

- d. 一旦、資材が陸揚げされると、日本の貿易商社によって、羽田空港、成田空港 又は 横浜港の構内で受け取られ、通関手続きを経て後工事現場へ搬入され 建設請負業者に引き渡される。

貿易商社の建設請負業者への請求書には、下記のものが含まれている。

- (1). c 項で述べられている総ての金額。
- (2). 日本での倉庫に対する蔵敷き料を含む構内経費。
- (3). 諸通関費用。

(4). 構内から工事現場までの輸送費。

(5). 貿易商社自身の経費。

e. 上記の過程を経て搬入された CONUS 資材 については、(当然のことながら) 建設請負業者は、相応の経費と利益を彼の入札価格に計上することを、忘れてはならない。

以下の事柄は、見積もりに当たって輸入業者から情報が得られない場合の、輸入業者の見積もりには何が含まれているかを考察する場合の、一例である。

f. 最近の調査に基づいて、日本の建設請負業者が CONUS 資材 を合衆国より輸入し、工事現場に搬入するまでの場合の、資材価格を除いた諸経費を説明すれば、概ね下記の通りである。

### 1. 輸送費

a. 航空輸送: From Los Angeles To Narita/Baneda

Weight 45 kg 以内 \$ 6.90 /kg (但し 最低運賃は \$ 50.00 である。)

45 kg 以上 100 kg 以内 \$ 4.63 /kg

100 kg 以上 300 kg 以内 \$ 3.64 /kg

300 kg 以上 \$ 3.31 /kg

(但し、重量と容積の関係については、366 cubic inches = 1 kg の規定があり、同一貨物について、重量運賃と容積運賃とが比較され、高額の方が運賃と決定される。)

上記の外に、最低 \$ 8.00 からの構内手数料が必要となり、更に、最低 \$ 20.00 からの CURRENCY ADJUSTMENT FACTOR が 航空輸送会社から必ず請求される。

#### 最小航空輸送費用

基本航空輸送料: \$ 50.00

空港構内手数料: \$ 8.00

Currency Adjustment Factor: \$ 20.00

合計: \$ 78.00

b. 海上輸送: From Oakland To Yokohama

VOLUME で算定され、通常コンテナ- 単位で取り扱われている。

20 FEET CONTAINER (5.933 M x 2.354 M x 2.409 M = 33.65 CM )

40 FEET CONTAINER (12.06 M x 2.343 M x 2.383 M = 67.36 CM )

	<u>20 Feet Container</u>	<u>40 Feet Container</u>
基本料金	\$ 2,540	\$ 3,770
Currency Adjustment Factor	26%	26%
Fuel Adjustment Factor	\$ 48	\$ 48
荷受け諸費用	<u>\$ 325</u>	<u>\$ 360</u>
合計	\$ 3,573	\$ 5,158

( 昇電機や空調機器が輸送される場合 )

上記の費用が、個々のケースでは掛かるのであるが、実際には輸入業者は多数の品目をまとめて梱包し、輸入するので、少量の CONUS 資材の輸送費用等を、我々が判断することは困難であり、貿易商社の見積もり書に勝るものはない。

## IBOP ANALYSIS PROCEDURE

### IBOP の分析手順

1. SPECIAL PROJECT の STEP II の段階、NILCON の DD Form 1391 の段階及び \$ 25,000 以上の、LOCALLY FUNDED PROJECT の最終設計段階では、必ず PROJECT の IBOP 分析を、しなくてはならない。  
その手順は以下の通りである。
  - 1-a. 概略設計
  - 1-b. 概略 WORK SCOPE の決定。
  - 1-c. 概略積算書の作成。
  - 1-d. IBOP の分析。
  
2. 以下の記述は、添付文書(4)及び(5)で示されている積算書例を理解するための KEY である。ここでの資材価格は、建設請負業者の価格であるということを、再び想起すること。
  - a. U.L.Label の関係や、技術的根拠によって、CONUS 資材 でなければならない材料は、U.S.資材として積算し、積算書のその項目の冒頭に "US" とマークする。
  
  - b. DoD and 合衆国陸軍工作隊 日本地区隊によって、日本産/製資材でよいとされているもの、及び技術的根拠によって、日本産/製資材でなければならないものは、積算書のその項目の冒頭に "L" とマークする。
  
  - c. 上記二項目に該当しない材料については
    - (1). CONUS 資材 の価格が、同等同質とみなされる日本産/製資材のそれと同額、若しくは低額である場合は、CONUS 資材 を採用し、2a と同じ取扱いにする。
  
    - (2). CONUS 資材 の価格が、同等同質とみなされる日本産/製資材のそれより高額の場合は、その項目の冒頭に \* 印 をマークし、両者の価格をその欄に併記し CONUS 資材 の価格を、括弧でくくる。
  
  - d. 従って、PROJECT TOTAL COST の欄は 二本建ての最終価格となる。その差異は、\* 印の資材価格についてのみである。

[併記された欄の、括弧でくくられた資材価格(CONUS 資材)を採用した TOTAL COST は ] PLANNED PROCEDURE と呼ばれ、IBOP によって(CONUS 資材であることを)免除された資材を除いて、他の資材は総て CONUS 資材 が 買い付けられる事を意味する。[添付文書(4)及び(5)では、"US"、

"\*- CONUS" 並びに L を採用]

(これに反して、括弧でくくられていない TOTAL COST は) NORMAL PROCEDURE と呼ばれ、仕様書で CONUS 資材として要求されている CONUS 資材と、同等同質とみなされている日本産/製資材の価格より安い価格の CONUS 資材を除いて、他は総て日本産/製資材が買い付けられる事を意味する。「添付文書(4) 及び (5) では、"US"、"\*-LOCAL" 並びに L を採用]

e. IBOP の分析は、(資材についてのみであり) 施工費については、LOCAL LABOR COST が採用されるものとする。

3. IBOP の検討は、(上記の手順で作成された COST ESTIMATE が記載されている) 積算書式: NAVFAC (11013/1-78) 上で実行されねばならないものとする。

4. IBOP の分析の実行

a. IBOP の 検討欄

IBOP	NORMAL PROCEDURE	PLANNED PROCEDURE	CHANGE
CWE	A 欄	B 欄	C 欄
FEC	D 欄	E 欄	F 欄

b. A 欄には NORMAL PROCEDURE の TOTAL COST の数値が 記入される。

B 欄には PLANNED PROCEDURE の TOTAL COST の数値が 記入される。

C 欄には A 欄 と B 欄との価格の差が 記入される。

D 欄には A 欄 の 価格から、総ての CONUS 資材 ("U.S."印のもの)の価格の総和を減じた数値が、記入される。(残った総ての資材は、日本産/製資材である。)

E 欄には B 欄から、総ての CONUS 資材 ("US" 及び 括弧でくくられた "\*-CONUS"印のもの) の価格の総和を減じた数値を記入する。(残った総ての資材は、日本産/製資材である。)

F 欄には D 欄とE 欄との価格の差が 記入される。

- c. IBOP の検討欄 での、CWE は、CURRENT WORKING ESTIMATE であり、PROJECT の実行予算での、NORMAL PROCEDURE と PLANNED PROCEDURE との単純比較を意味する。

これに比して、FEC は、FOREIGN EXCHANGE COST であり、PLANNED PROCEDURE と NORMAL PROCEDURE についての、総ての日本産/製資材の価格と施工費の総和の単純比較である。

- d. IBOP の最終作業は、C 欄 の数値と、F 欄 の数値の 50% の数値との 比較で 終了する。

C 欄 の数値は、\* 印の資材について、同等同質とみなされる日本産/製資材 のかわりに、CONUS 資材 を採用したことによって増加した US DOLLAR の金額 である。

F 欄 の数値は、\* 印のついた資材について、CONUS 資材と同等同質とみなさ れている日本産/製資材を採用することによる外国通貨(この場合は Y) に支払 われる US DOLLAR の金額である。

IBOP は、CONUS 資材は、その価格がそれと同等同質とみなされる日本産/製 資材の価格に、更にその 50% を加算した額を超えない場合に採用されるという ことを、我々に想起させている。であるが故に。

もしも、C 欄の数値が、F 欄の数値の 50% の数値より低ければ、このプロジェ クトは、PLANNED PROCEDURE によって実行されねばならず、このことは、\* 印 の資材は総て CONUS 資材 が採用されねばならないことを意味している。

それに反して、C 欄の数値が、F 欄の数値の 50% をこえているならば、この プロジェクトは、NORMAL PROCEDURE で実行されねばならず、それは、総ての \* 印の資材は、CONUS 資材と同等同質とみなされる日本産/製資材が採用さ れねばならないことを意味している。

**COST ESTIMATE**

DATE PREPARED

SHEET OF

**IBOP SAMPLE "A"**

PROJECT TITLE

**ROLL-A-WAY COVER, SEASIDE SWIM. POOL**

ESTIMATED BY \_\_\_\_\_  
 CATEGORY CODE NUMBER \_\_\_\_\_  
 JOB ORDER NUMBER \_\_\_\_\_

STATE OF DESIGN  
 Prelim  Final  Other \_\_\_\_\_ **STEP II**

ITEM DESCRIPTION	QUANTITY		MATERIAL COST		LABOR COST		ENGINEERING ESTIMATE	
	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
L. CONC. FOUNDATION	35	M <sup>3</sup>	40.00	1,400.00	60,000	2,100,000		2,240,000
* POOL COVER Local CONCRETE	364	M <sup>2</sup>	100,000 (148,000)	36,400,000 (53,892,000)	60,000	21,840,000		58,240,000 (75,912,000)
L. ALUM. DOOR	2	EA	50,000	100,000	20,000	40,000		140,000
* MODIFY FENCE Local CONCRETE	20	M	20,000 (28,000)	400,000 (440,000)	20,000	400,000		800,000 (880,000)
U.S. PROVIDE STEAM PIPE	160	M	50,000	4,800,000	20,000	3,200,000		8,000,000
* REPLACE TEMP. CONTROLL SYSTEM Local CONCRETE	1	EA	40,000 (80,000)	40,000 (80,000)	10,000	10,000		50,000 (90,000)
* PROVIDE O.A. SUPPLY BLOWER Local CONCRETE	1	EA	200,000 (210,000)	200,000 (210,000)	50,000	50,000		250,000 (260,000)
W/HEATING COIL, SUPPORT								
L. PROVIDE DUCT INSULATION	10	M <sup>2</sup>	3,000	30,000	1,000	10,000		40,000
U.S. PROVIDE UNIT HEATER	4	EA	21,000	84,000	5,000	20,000		104,000
* PROVIDE ELEC PANEL Local CONCRETE	2	EA	40,000 (80,000)	80,000 (80,000)	5,000	10,000		90,000 (98,000)
L. PROVIDE ELEC CONDUIT PIPE & WIR'G	540	M	2,000	1,080,000	1,000	540,000		1,620,000
* LIGHT FIXTURES Local CONCRETE	6	EA	20,000 (40,000)	120,000 (240,000)	2,000	12,000		132,000 (252,000)
L. FITTING & MISC.	1	LS	100,000	100,000	20,000	20,000		120,000
L. SCAFFOLDING	600	M <sup>2</sup>	600	360,000	1,200	720,000		1,080,000
<b>TOTAL PROJECT COST</b>								<b>72,906,000</b> <b>75,912,000</b>

IBOP SAMPLE "A"

IBOP	NORMAL	PLANNED	CHANGE
	PROCEDURE	PROCEDURE	
CWE	¥ 72,906,000	¥ 90,636,000	¥ 17,730,000
FEC	¥ 68,072,000	¥ 30,782,000	¥ 37,290,000

OR (¥ 135/S)

	NORMAL	PLANNED	CHANGE
	PROCEDURE	PROCEDURE	
CWE	\$ 540,040	\$ 671,380	\$ 131,340
FEC	\$ 503,870	\$ 228,020	\$ 275,850

$\$ 131,340 < \$ 157,925 = \$ 275,850 \times 0.5$

By above analysis, we have to apply "Planned Procedure".

ACTIVITY AND LOCATION		COST ESTIMATE				DATE PREPARED	SHEET	OF
IBOP SAMPLE "B"		CONSTRUCTION CONTRACT NO.						
PROJECT TITLE		ESTIMATED BY				SCALE OF DRAWING		
ROLL-A-WAY COVER, SEASIDE SWIM. POOL		STEP II				JOB ORDER NUMBER		
ITEM DESCRIPTION	QUANTITY		MATERIAL COST		LABOR COST		ENGINEERING ESTIMATE	
	NUMBER	UNIT	UNIT COST	TOTAL	UNIT COST	TOTAL	UNIT COST	TOTAL
L. CONC. FOUNDATION	35	M <sup>3</sup>	40,000	1,400,000	60,000	2,100,000		2,740,000
* POOL COVER	364	M <sup>2</sup>	100,000 (160,000)	36,400,000 (58,240,000)	60,000	21,840,000		58,240,000 (80,080,000)
L. ALUM DOOR	2	EA	50,000	100,000	20,000	40,000		140,000
* MODIFY FENCE	20	M	20,000 (24,000)	400,000 (840,000)	20,000	400,000		800,000 (1,240,000)
U.S. PROVIDE STEAM PIPE	160	M	30,000	4,800,000	20,000	3,200,000		8,000,000
* REPLACE TEMP. CONTROLL SYSTEM	1	EA	40,000 (80,000)	40,000 (80,000)	10,000	10,000		50,000 (90,000)
* PROVIDE O.A. SUPPLY BLOWER W/HEATING COIL, SUPPORT	1	EA	200,000 (210,000)	200,000 (210,000)	50,000	50,000		250,000 (260,000)
L. PROVIDE DUCT INSULATION	10	M <sup>2</sup>	3,000	30,000	1,000	10,000		40,000
U.S. PROVIDE UNIT HEATER	4	EA	21,000	84,000	5,000	20,000		104,000
* PROVIDE ELEC PANEL	2	EA	40,000 (44,000)	80,000 (88,000)	5,000	10,000		90,000 (98,000)
L. PROVIDE ELEC CONDUIT PIPE & WIR'G	540	M	2,000	1,080,000	1,000	540,000		1,620,000
* LIGHT FIXTURES	6	EA	20,000 (40,000)	120,000 (240,000)	2,000	12,000		132,000 (252,000)
L. FITTING & MISC.	1	LS	100,000	100,000	20,000	20,000		120,000
L. SCAFFOLDING	600	M <sup>2</sup>	600	360,000	1,200	720,000		1,080,000
TOTAL PROJECT COST							* 72,906,000	* 95,004,000

SA 001-0-00-100

IBPO SAMPLE "B"

IBOP	NORMAL	PLANNED	CHANGE
	PROCEDURE	PROCEDURE	
CWE	¥ 72,906,000	¥ 95,004,000	¥ 22,100,000
FEC	¥ 68,022,000	¥ 30,782,000	¥ 37,240,000

OR (¥:135/\$.)

IBOP	NORMAL	PLANNED	CHANGE
	PROCEDURE	PROCEDURE	
CWE	\$ 540,040	\$ 703,730	\$ 163,700
FEC	\$ 503,870	\$ 228,020	\$ 275,850

$\$ 163,700 \times 1.35 = \$ 221,000$   
 $\$ 137,925 = \$ 275,850 \times 0.5$

By above analysis, we have to apply "Normal Procedure".



MEMORANDUM

From: (Engineering)  
To: (Contracts)

Subj: GOVERNMENT ESTIMATE (GE)

Encl: (1) GE dtd \_\_\_\_\_

1. The government estimate attached is forwarded.

CONTRACT NUMBER N62836- \_\_ -C-\_\_

TITLE \_\_\_\_\_

2. IBOP ANALYSIS

ITEM/COST	NORMAL (Local material)	PLANNED (U.S. material)	DIFFERENCE
CWE			(A)
FEC			(B)

(A) / (B) = \_\_\_\_\_

(A)/(B) EQUAL TO OR LESS THAN 0.5 USE PLANNED PROCEDURE

(A)/(B) GREATER THAN 0.5 USE NORMAL PROCEDURE

\_\_\_\_\_ PROCEDURE WILL BE USED FOR THE PROCUREMENT

3. \_\_\_\_\_, (Yes or No) U.S. materials have been specified for some specialized requirements.

\_\_\_\_\_  
APPROVED SIGNATURE

\_\_\_\_\_  
DATE

Enclosure (6)

**CUSTOMS FREE IMPORT OR EXPORT OF CARGO  
OR CUSTOMS DECLARATION OF PERSONAL PROPERTY**

(Authority: USFJ Policy Letter # 11-12)

輸 荷 輸 入 出 無 税 或 は  
私 有 物 関 税 申 告 書  
(根拠：在日米軍ポリスィー レター 第 11-12)

目的 <input checked="" type="checkbox"/> <b>IMPORT</b> 輸入 <input type="checkbox"/> <b>EXPORT</b> 輸出 (Check applicable box) (相当欄に印をつけよ)	<b>FOR USE OF</b> (Check applicable box) 使用目的 (相当欄に印をつけよ)
(Check Applicable Box) <input checked="" type="checkbox"/> <b>United States Armed Forces</b> 米軍部隊 <input type="checkbox"/> <b>Authorized Procurement Agency</b> 認可採買機関 (相当欄に印をつけよ) <input type="checkbox"/> <b>Non-Appropriated Fund Activity</b> 非承認予算機関	<input checked="" type="checkbox"/> <b>Official Use by the United States Armed Forces</b> 米軍公用 <input type="checkbox"/> <b>United States Forces Personnel</b> 米軍要員



Identifying Marks & Numbers 識別記号及番号	Units 単位	Quantity 数量	Weight 重量	DESCRIPTION* (If Automobile, include Chassis & Engine No.) 明細 (自動車の場合は車台及エンジン番号を含む)	Value* 価格
FROM: TELEDYNE ENERGY SYSTEMS 110 W. TIMONIUM RD. TIMONIUM, MD. 21093  TO: U.S. NAVY/MCB CAMP FUJI ATTN: M.F. TAKAKI/Mr. James Knepler  AWBL NO: 205-8501-0332 HOUSE AWB NO: 31166855 FLT NO. : ALL NIPPON AIRWAYS FLIGHT 005 POE: SAN FRANCISCO INT'L AIRPORT POD: NEW TOKYO INT'L AIRPORT (NARITA)	PC	1	90.6 KG	THERMOELECTRIC GENERATOR SERIAL 6060.	N. C. V.

\* Not Required for U.S. Military Cargo 米軍軍用貨物は不要

**CONTINUATION** 続き

Identifying Marks & Numbers 識別記号及番号	Units 単位	Quantity 数量	Weight 重量	DESCRIPTION* (If Automobile, include Chassis & Engine No.) 明細 (自動車の場合は車台及びエンジン番号含む)	Value* 価格

\* Not Required for U.S. Military Cargo 米軍軍用貨物は不要

<b>CARGO CERTIFICATION</b> 積荷証明		<b>PERSONAL PROPERTY CERTIFICATION</b> 私人物証明	
This certifies that the material, supplies and/or equipment identified above, for shipment as marked, are for the exclusive use as indicated. 上記資材、供給品及び/或は備品は記号通りの積出しのみ指示された通りの専用用途の物である事を証明する。		1. The undersigned certifies that he is a member of the United States Forces or an employee of a Contractor, as defined in USFJPL 11-12, and that the above listed property is imported by me for the personal use of myself (or my dependents) and that such property will not be disposed of to persons or agencies not accorded the benefits of the Status of Forces Agreement except as authorized by regulations.	
Signature 署名  <p align="center"><b>J. R. RYAN</b></p> 		2. I further certify that my personal property and personal effects contain no items or commodities prohibited by USFJPL 11-12.	
Title and/or Rank 地位及び/或は階級  <p align="center"><b>CARGO CERTIFICATION OFFICER</b></p>		1. 下記の者は在日本米軍ポリスイーター 11-12 に定められている米軍の員であるか或は其者の従業員であり、上記所有物は自己(又は本人の家族)の個人的使用のみに自己により輸入し又該所有物は規定により許可されたものを除き地位協定の条項に一致しない個人或は機関に対しては処分しないものである事を証明する。	
Agency, Unit or Activity 機関部隊  <p align="center"><b>NSD YOKOSUKA</b></p>		2. 私は更に私の私人物及び身の廻り品は在日本米軍ポリスイーター 11-12 で禁ぜられている品目又は商品を含んでいない事を証明する。	
AUTHENTICATING OFFICER 認証官		Signature 署名	
Date 月日 <b>NOV. 6 1989</b>	USFJ Case Number 書類番号 <b>NAY-30902-CT</b>	Rank and Title (If Applicable) 階級及地位 (若しあらば)	
Title and/or Rank 地位及び/或は階級  <p align="center"><b>T. P. STATZ, LT, SC, USNR</b></p> 		Organization (If Applicable) 団体 (若しあらば)	
Agency, Unit or Activity 機関部隊  <p align="center"><b>U. S. FLEET ACTIVITIES, YOKOSUKA</b></p>		FOR USE BY JAPANESE CUSTOMS HOUSE ONLY 日本税関の使用用	
Vessel/Aircraft 船舶/航空機		Nationality 国籍	Port of Landing 上陸地
Origin of Goods 貨物の製造者		Port of Shipment 積出港	

NOTE: Signature, Title and Organization of Authenticating Officer must be on file with Customs House before this Authentication is valid.  
 注意: 認証官の署名、地位、所属は本認証が有効になる前に税関に提出しておくこと。