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NAVFAC DM-6
February 1978

MILITARY HANDBOOK

POLICY AND PROCEDURES FOR PROJECT DRAWING AND SPECIFICATION PREPARATION

NO DELIVERABLE DATA REQUIRED BY THIS DOCUMENT

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ABSTRACT

Instructions for the preparation of Engineering and Design Project Drawings and Specifications are presented for the use of in-house designers, engineers- or architects-in-charge, and architectural and engineering firms. This military handbook includes general design policies, drawing preparation and distribution, specification preparation, and review and approval procedures.

FOREWORD

This handbook is one of a series developed for instruction on the preparation of Navy facilities engineering and design criteria documents. This handbook uses, to the maximum extent feasible, national and institute standards in accordance with Naval Facilities Engineering Command (NAVFACENGCOM) policy. Deviations from MIL-HDBK-1006/1 for NAVFACENGCOM project drawings and specifications preparation shall not be made without prior approval of NAVFACENGCOM Headquarters Code DS02.

Recommendations for improvement are encouraged from within the Navy, other Government agencies, and the private sector and should be furnished on the DOD Form 1426 provided inside the back cover to Commanding Officer, Chesapeake Division, Code 406, Washington Navy Yard, Washington, D.C. 20374; phone commercial (202) 433-3314.

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 STUDIES AND DESIGN (FINAL PLANS, SPECIFICATIONS, AND COST ESTIMATES). DO NOT REFERENCE IT IN MILITARY OR FEDERAL SPECIFICATIONS OR OTHER PROCUREMENT DOCUMENTS.

ENGINEERING AND DESIGN CRITERIA PREPARATION

Document Number	Title	Preparing Activity
MIL-HDBK-1006/1	Policy and Procedures for Project Drawing and Specification Preparation	CHESDIV
DM-6.02	Guide Specification Manual	NORTHDIV
MIL-HDBK-1006/3	Policy and Procedures for Engineering and Design Criteria Manual Preparation	HDQTRS
MIL-HDBK-1006/4	Policy and Procedures for Definitive and Standard Designs and Standard Specifications Preparation	HDQTRS

NOTE: NAVFAC design manuals (DM), when revised, will be converted to military handbooks (MIL-HDBK).

POLICY AND PROCEDURES FOR PROJECT DRAWING AND SPECIFICATION PREPARATION

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Section 1: INTRODUCTION

1.1 Scope. This military handbook, MIL-HDBK-1006/1, provides policy and detailed procedures for developing and revising engineering project drawings and specifications used in construction contracts.

1.2 Purpose of Criteria. NAVFACENGCOM criteria are developed to define facilities engineering and design technology, functional/operational requirements, and health and safety for the Navy. There are about 20,000 local modifications of the three model building codes in the United States and often 15 to 30 different authors for a particular subject that applies to the Navy. Make the maximum effort to adopt local criteria when it applies; however, the effectiveness of criteria must be evaluated Navy-wide to ensure quality and consistency.

The Navy's Engineering and Design Criteria Manual program includes discipline-oriented design manuals on engineering and design technologies, specific facilities engineering, and design criteria manuals for functional requirements.

This handbook has been developed to ensure consistency and clarity of project drawings and specifications that form the basis of contracts for the construction of naval shore facilities.

1.3 Project Drawings. Project drawings are the graphical representation of the overall project design. For a typical Military Construction (MCON) project, the design develops through a number of steps once the facility deficiency is identified and the scope substantiated by the Shore Installations and Facilities Planning and Programming Systems. Other types of projects follow a similar process.

1.3.1 First Concept. The project concept is first developed by the local activity and is formalized in a DD 1391 Military Construction Line Item Data and Facility Study (see NAVFACINST 11010.32, for Military Program Projects, Preparation of Supporting Documents). This is reviewed by NAVFACENGCOM Engineering Field Divisions (EFD) for requirement validation, technical adequacy of the design solution, and reasonable cost estimate. The package then becomes a candidate for the Navy MCON Program.

1.3.2 Project Engineering Documentation (PED). When an MCON project is placed in an upcoming FY MCON Program, NAVFACENGCOM is authorized to initiate formal design work to obtain the PED that goes to Congress (see NAVFACINST 11010.14, Project Engineering Documentation (PED) for Proposed Military Construction Projects). At this time, planning funds are released to EFDs to embark on the design. Normally, the PED will be based on a design effort that proceeds to the 35 percent stage. This means that most, if not all, questions relating to user needs and technical considerations (such as energy conservation) will have been resolved prior to detailed Congressional review.

1.3.3 Final Design. After authorization, the project proceeds to completion of design, with the end result being a bidding package consisting of drawings, specifications, and a Government cost estimate.

1.4 Cancellation. This military handbook supersedes Chapters 1, 2, and 3 of NAVFAC DM-6, Drawings and Specifications, of February 1978 and change 1 of March 1979.

Section 2: POLICY

2.1 Criteria.

2.1.1 NAVFACENGCOM. The following criteria shall be used for the design of naval shore facilities to the extent required within the criteria. Where requirements are preceded by optional guidance, such as "should," "can," or "may," those requirements are not mandatory. EFDs and A/Es will be allowed the maximum latitude in creative thinking, new concepts, and the use of new materials; however, when deviations from mandatory published criteria are considered, prior clearance shall be obtained from NAVFACENGCOM Headquarters.

a) NAVFAC P-272, Definitive Designs for Naval Shore Facilities;
b) NAVFAC standard drawings;
c) NAVFAC criteria manuals;
d) NAVFAC guide specifications.

2.1.2 Department of Defense.

a) DOD Manual 4270.1-M, Construction Criteria Manual, is applicable to all military construction. Appropriate NAVFACENGCOM instructions and other types of publications have been developed to implement, clarify, or supplement the data contained in this manual.

b) Military Standards. Mandatory documents are issued within the Department of Defense in accordance with the basic policy contained in DOD Manual 4120.3, Defense Standardization and Specification Program Policies, Procedures and Instructions. These documents establish the engineering and technical limitations and applications for items, materials, processes, methods, designs, and engineering practices for use with DOD projects.

c) The Department of Defense Index of Specifications and Standards (DODISS). DOD adopted industrial and Government specifications.

2.2 Design Policy. Some policies having a direct impact on the design of facilities are included in the documents listed below:

a) Design Philosophy	NAVFAC DM-1.01
b) Appropriate Architecture	NAVFAC DM-1.01
c) Integrated Design:	NAVFAC DM-1.01 DOD 4270.1-M
d) Handicapped Access:	NAVFAC DM-1.01 DOD 4270.1-M
e) Fire Protection:	MIL-HDBK-1008
f) Use of Asbestos:	OPNAVINST 5100.23 NAVFAC DM-1.01 NAVFACINST 5100.11
g) System Safety Engineering:	OPNAVINST 5100.24 NAVFACINST 5100.11
h) Energy Conservation:	DOD 4270.1-M
i) Safety and Health:	NAVFACINST 5100.11

2.3 International System of Units (SI). For dimensions on project drawings, use customary U.S. dimensions unless the project is in an area where SI dimensions are normally used. In such case, use SI dimensions.

As it becomes economical and appropriate, it is NAVFACENGCOM's intention to work with both the public and private sectors to develop "hard" SI sizes. However, avoid use of "hard" SI numbers as their use may not be cost-effective.

The International System of Units is the internationally-accepted "metric" system. The acronym to be used is SI -- meaning "system international." Use of the word "metric" is no longer accepted practice.

For details of the proper use of SI units, use ASTM E380-82, Standard for Metric Practice, for generic conversions and ASTM E621-79, Recommended Practice for the Use of Metric (SI) Units in Building Design and Construction, for conversions in engineering and design. Follow principles for presentation cited in ASTM E621-79, with the exception of the spelling of "metre" and "litre." These are to be spelled "meter" and "liter."

2.3.1 Linear Dimensions. Use meters (m) for all linear dimensions for structures and field dimensions. Use millimeter (mm) for dimensioning elements of structures where the manufacturer would cite in millimeters; i.e., wallboard panels. Do not use centimeter (cm); it is not recommended for use in building design and construction.

2.3.2 Units Less than Unity. Show SI units of less than the whole as a decimal with a zero preceding the decimal point (e.g., 0.25 m).

2.3.3 Spacing in Use of SI Units. Do not use commas in presenting SI units. Numbers are broken by a space, three spaces to the right and left of the decimal point. Four numbers need no break (e.g., 0.420 50 m vs. 0.4250 m). Leave a space between the number and the SI unit. When citing SI units, do not separate the number and the unit on two lines.

2.4 Ownership of Drawings and Specifications. DOD policy is not to acquire exclusive control of contracted plans and specifications. Accordingly, the clause required by the Federal Acquisition Regulation (FAR) 227.408-2(A) and set forth in FAR 52.245-11, entitled Government Rights (Unlimited), shall generally be used. If exclusive control of the data relative to the design is desired, then the appropriate clause shall be inserted. In accordance with either clause, the Government has unlimited rights in all work developed in the performance of the A/E contract.

2.5 Publication of Drawings. Authority to publish drawings for any purpose must be obtained from NAVFACENGCOM.

2.6 Computer-Aided Design/Drafting (CADD). The use of computer graphics systems for the design and production of project drawings has resulted in increased productivity and more accurate drawings. A/Es are encouraged to use computer-aided design/drafting on Navy work. Certain projects may be required to be performed either on a Computervision system

utilizing CADDS 4X, current NAVFAC software revision, or on a system(s) capable of providing an equivalent (CADDS 4X) compatible data base through a conversion process. In either case, both IGES/PDES (Initial Graphic Exchange Specification/Product Data Exchange Specification, whichever is current) and Computervision data bases on magnetic tapes are required. A design manager may substitute the Computervision requirement for others where deemed necessary and justified. The final design data base shall be modified to incorporate as-built conditions.

2.7 Registration. Project drawings and specifications shall be developed under the direction of a registered architect or a professional engineer. Registration in the state where the project is to be constructed is not required.

Section 3: DRAWING TYPES

3.1 Scope. The descriptions of various drawing types that follow apply to all drawings prepared under the general direction of the Naval Facilities Engineering Command.

3.2 Sketches. Informal drawings may or may not be drawn to scale. Unless required by the EFD, they need follow no particular format.

3.3 Schematics. Single- or double-line drawings showing plans and general arrangements and, when required, elevations and sections depicting types of construction and the relationship of component parts.

3.4 Renderings. Pictorial delineations of buildings or portions of buildings to show the appearance of the completed facility. Renderings may be black and white or in color, in various media on various surfaces. Size and type are dictated by the intended use and the architectural designer's concept of the work.

3.5 Models or Mockups. Use models or mockups only when required to define the schematics properly. Refinement should not exceed that required for a solution. Models shall not be prepared for display purposes only.

3.6 Conceptual Definitive Designs. P-272, Definitive Designs for Naval Shore Facilities, Part I, contains drawings of typical buildings and structures, classified by Category Codes 100 through 700, which reflect space criteria issued in DOD 4270.1-M, Construction Criteria Manual, and NAVFAC P-80, Facility Planning Criteria for Navy and Marine Shore Installations. See NAVFAC P-72, Department of the Navy Facility Category Codes, for a more detailed description of category codes. These drawings provide floor plan arrangements, building sections or elevations, and utility requirements for general guidance to A/E contractors or in-house staff in preparing project designs. These drawings are used in conjunction with NAVFACENGCOM criteria manuals, handbooks, and guide specifications listed in P-34, Engineering and Design Criteria for Navy Facilities, to develop the project drawings and specifications.

3.7 Prototype Definitive Designs. P-272, Part II, contains advance designs where specific control is required to meet standardized functions. These drawings of more complex facilities often required at shore installations are classified generally by Category Codes in the 800 series. These drawings provide floor plans, equipment layouts, piping diagrams, electrical schematics, and critical requirements for specific guidance in preparing project designs. These drawings are used in conjunction with NAVFAC criteria manuals, handbooks, and guide specifications listed in P-34 to develop the project drawings and specifications.

3.8 Standard Drawings and Specifications. These are detailed working drawings and specifications of Navy-unique facilities listed in P-34. These drawings form a part of the construction documents requiring only supplemental drawings for adapting the facility to the specific site. Their use is mandatory without change for ammunition facilities, whereas all others may be

modified as necessary to meet specific requirements. Standard specifications are facility specifications that contain sections covering unique construction that are incorporated verbatim in the project specifications. These sections are supplemented by guide specification sections covering conventional or project-unique features such as concrete or sitework.

3.9 Facility Plates. These are single-line schematics, bubble diagrams, or graphics based on definitive drawings included in the facility-type design manuals to show functional relationships or building layout. Plates of individual rooms may be scaled drawings providing specific detailed information concerning the design of individual rooms within a specific type of facility. These plates may show (1) the location of all equipment and furnishings within the room, (2) the location of utilities serving the room (electrical, water, gas, etc.), (3) the location and size of doors and windows, (4) a reflected ceiling plan showing location of lighting fixtures, and other technical design information about the room. See MIL-HDBK-1006/3 for method of preparing facility plates.

3.10 Site Adapt Designs. Project drawings and specifications from a prior project may be modified (site-adapted) to develop drawings and specifications for another project with similar requirements.

3.11 Project (or Contract) Drawings. Drawings prepared in-house or by A/E to show extent of work required by a construction contract. Project drawings and the project specifications form the technical portion of a construction contract.

3.12 Quality Control Submissions. Shop drawings, schedules, diagrams, catalog cuts, and other data are submitted by the construction contractor to illustrate some portion of the work. Adherence to DOD-STD-100, Engineering Drawing Practices, is encouraged for shop drawings but is not mandatory. Samples are physical examples illustrating materials, workmanship, or equipment. These samples establish standards by which the work will be judged. Product data are brochures, illustrations, standard schedules, performance charts, and other information submitted by the contractor to illustrate a material, product, or system for some portion of the work.

3.13 As-Built Marked Prints. Upon completion of facilities, the construction contractor or the military construction force is required to provide the ROICC with marked prints indicating construction deviations from the contract drawings (see NAVFAC P-68, Contracting Manual). The information required must show all features of the project as built. The ROICC must review the marked prints after completion to assure that exact as-built conditions are reflected. After completion of the project, as built marked-up prints are transmitted by the ROICC to the Engineering Field Division (or assigned OICC).

3.14 Record Drawings. The original contract drawings, corrected in accordance with the marked prints to provide a permanent record of "as-built" conditions upon completion of the construction work on a project. Record drawings can be made from reproducibles of the original drawing, although such action is not recommended.

Section 4: DRAWING PREPARATION AND DISTRIBUTION

4.1 Project Drawings. Project drawings must be complete, accurate, and explicit. All elements of work must be coordinated properly to ensure that there are no conflicts between disciplines or between drawings and specifications. Provide sufficient detail to show the extent, size, shape, and relationship between materials. Duplication of information on the drawings and in the specifications must be avoided. Project drawings for repetitive type facilities should be prepared to enable site-adaptation for another facility with minimal revision. To accomplish this, all details pertaining to the individual site such as location map, site plan, extension of utilities, soil boring logs, foundation plans, and foundation details shall be placed on sheets separate from those containing the basic facility.

4.2 Military Standard. Prepare all drawings in accordance with DOD-STD-100.

4.3 Order of Drawings. Arrange drawings for buildings and structures in the following order:

a) Title sheet and index of drawings (only for projects containing 60 or more drawings).
b) Plot and vicinity plans (including civil and utility plans). This sheet should include an index for small projects.
c) Landscape and irrigation.
d) Architectural (including interior design).
e) Structural.
f) Mechanical (heating, ventilation, and air conditioning).
g) Plumbing.
h) Electrical.
i) Fire protection.

4.4 Drawing Sizes and Format. The following should be used for NAVFACENGCOM drawings:

Type	Size (inches)
Flat	17 x 22 - when small sheets are required
Flat	22 x 34 (D size) - project and other drawings
Flat	28 x 40 (F size) - option to 22 x 34

Drawings and specifications should preferably be separate. Avoid putting drawings in specifications and specification data on drawings. When drawing pages are attached to the specification, they shall match the specification page size.

4.5 Line Characteristics. Filming requirements demand that attention be paid to opaqueness and uniform weight of lines, assuring legible reductions and blowbacks as successive generations of prints are obtained.

4.6 Conventions and Symbols. Use consistently in accordance with the following:

4.6.1 Conventions. For line, section, and sectioning conventions, see ANSI Y14.2M, Line Conventions and Lettering, Engineering Drawing and Related Documentation Practices. Use the symbols shown in Figure 1 to identify building sections, elevations, wall sections, and details.

4.6.2 Abbreviations. Use MIL-STD-12, Abbreviations, for all abbreviations on drawings.

4.6.3 Symbols. Conform to current industry practice.

NAVFACENGCOM has a library of symbols for computer-aided design/drafting that must be used when project drawings are produced by computer graphics. Consult the EFD CADD Coordinator for details.

4.7 Lettering.

a) Use upper-case lettering except for notes on maps and similar drawings where lower-case lettering may be used.

b) The minimum allowable height of letters shall be free-hand 5/32 (0.156) inch and mechanical or computer graphics 0.150 inch.

4.8 Dimensioning and Tolerancing. Use ANSI Y14.5M, Dimensioning and Tolerancing for Engineering Drawings.

4.9 Drawing Notes. Place general notes a minimum of 3 inches below the space allocated for the revision block when the conventional title block is used. When vertical title block is used, place notes on the right side of the drawing. General notes for a set of drawings covering one particular type of work are placed on the first sheet of the set. Such notes include, but are not limited to, the following:

4.9.1 Notes for Structural Drawings. These include, when applicable, roof, floor, wind, seismic, and other loads, allowable soil pressure or pile bearing capacity, and allowable unit stresses of all material used in the design.

4.9.2 Notes for Civil, Mechanical, Sanitary, Plumbing, Electrical, and Similar Drawings of a Set. Notes shall include, when applicable, references to (a) criteria (not reference specifications) governing the design; (b) basic design data on civil, mechanical, sanitary, and electrical systems and facilities; (c) the activities datum plane; and (d) reference for vertical and horizontal control, including soundings.

4.9.3 Half-Size Prints. Half-size prints issued to prospective bidders shall contain a lettered or stamped note cautioning users against scaling. This note may be placed on either the tracing or the reduced print and should be located directly above or in the vicinity of the title block.

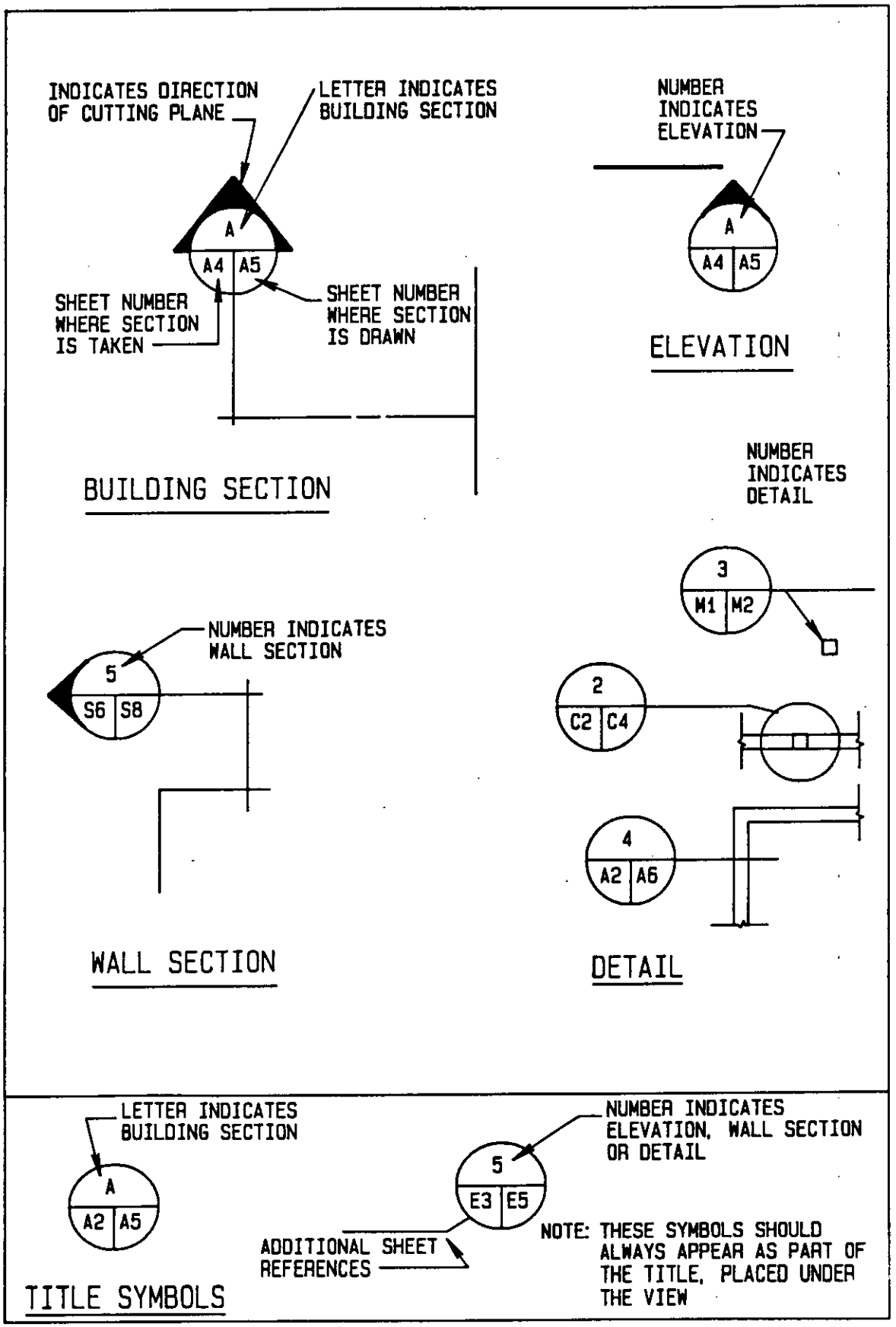


Figure 1
Symbols to Identify Sections, Elevations, and Details

4.9.4 Quality Control. The preparer shall perform a structured final quality control review of all drawings and specifications prior to final submittal. Review for technical accuracy, coordination of work within each discipline, coordination of work among disciplines, and coordination of drawings and specifications.

4.9.5 Common Errors. Many phrases and statements that are placed on drawings are considered satisfactory in professional architectural and engineering practice, but are not acceptable in the preparation of drawings for NAVFACENGCOM. The following is a list of items found repeatedly on drawings submitted by A/Es. After each error or group of related errors, there is a correct designation:

(1) Error: "As instructed by the Architect."

Correct: "As directed." (Avoid using this type of language, when possible, since it indicates uncertainty as to what the requirement is.)

(2) Error: "As approved by the Architect."

Correct: "As approved." Same comment as above.

(3) Error: "By others."
"By the Navy."
"By the Navy Facilities Engineering Command."

Correct: "By the Government."

(4) Error: "By electrical contractor."
"By plumbing contractor."
"By the plumber."
"By the elevator contractor."

Correct: Usually no statement is necessary. The Government recognizes only the prime contractor; the assignment of work to subcontractors is the prime contractor's responsibility and should not be done by the designer.

(5) Identify work shown on the drawings that is not included in the scope of the contract by the following notations: "NOT INCLUDED IN THIS CONTRACT;" or "NOT IN CONTRACT," "NIC;" or "BY THE GOVERNMENT;" or "GOVERNMENT FURNISHED EQUIPMENT," "GFE." The same terminology shall be used consistently throughout drawings.

(6) Error: "12 GA. ZINC-COATED STEEL FLASHING."
"COPPER FLASHING."

Correct: "METAL FLASHING." Metals are referred to only as metal and not as a particular kind or gage. Type and weight are covered in the specification.

(7) Error: "FORMICA."

Correct: "LAMINATED PLASTIC." Proprietary names are not permitted.

(8) New versus existing conditions should be clearly shown.

(9) The term "typical" is sometimes overused. Ensure that the work referred to as typical is clearly described on the same drawing that the term is used on or can be located easily.

(10) See paragraph 5.3.11, Common Errors, for additional data.

4.10 Title Blocks. Refer to Figures 2 through 7 for guidance purposes. These figures are not to scale. The title block shall indicate the name and location of the activity, general project, specific features on the sheet, identifying numbers of the sheet, specifications and contract numbers (if any), preparing activity including A/E contractor, if applicable, and the surnames of the personnel concerned in the preparation of the drawings. The code identification number '80091' shall appear in the title block of all NAVFACENGCOM drawings. Decals applied to the back of the drawings shall not be used. (They will not reproduce when the drawings are microfilmed.) Use the vertical title block format for all 22-by-34-inch (D-size) drawings. Use of the vertical title block is optional for 28-by-40-inch (F-size) drawings. See Figures 3 and 6 for guidance.

4.11 Numbering Drawings. Assign one NAVFACENGCOM serial drawing number to each drawing. The minimum height for these numbers is 1/4 inch. The sheet should also bear the sheet designating letter (I-Index, C-Civil, A-Architectural, S-Structural, M-Mechanical, P-Plumbing, E-Electrical, FP-Fire Protection, and W-Waterfront) and number (each discipline shall start with number 1) in the title block on the right side (see Figure 2). In the title block at the lower right-hand corner, the total number of sheets in the project set shall be shown beginning with sheet number 1 of the total number, 2 of total number, etc. If the drawings are part of the specifications, contracts, or requisitions, each drawing shall include the respective numbers of these documents.

4.11.1 Assignment of NAVFACENGCOM Drawing Numbers. The assigned number shall NOT be used for any other drawing even though the drawing to which it has been assigned may not be used for any purpose. Where extensive revision of any drawing necessitates preparation of a new drawing, a new NAVFACENGCOM drawing number shall be assigned to the new drawing, and cross-reference notes shall be placed directly above or adjacent to the title block as follows:

Old Drawing Note:	New Drawing Note:
THIS DRAWING SUPERSEDED BY DRAWING NO._____	THIS DRAWING SUPERSEDES DRAWING NO._____

No prefixes or suffixes are permitted.

4.11.2 Obtaining Drawing Numbers. The control of drawing numbers is the responsibility of the individual Engineering Field Division Commanders. NAVFACENGCOM has issued drawing numbers to EFDs within the following limits:

NORTHDIV ..... 2 000 000 to 2 999 999

CHESDIV ..... 3 000 000 to 3 999 999

LANTDIV ..... 4 000 000 to 4 999 999

SOUTHDIV ..... 5 000 000 to 5 999 999

WESTDIV ..... 6 000 000 to 6 999 999

PACDIV ..... 7 000 000 to 7 999 999

NAVFACENGCOM will retain custody of all drawing numbers up to and including 1 999 999 and all other drawing numbers not assigned.

Each EFD is responsible for issuing, assigning, and recording drawing numbers for its own use or the use of Officers in Charge of Construction, or activities within its geographical area. All activities shall maintain an assignment record including locations and drawing title of drawing numbers assigned to them. Each activity shall microfiche their drawing record logs at the end of each calendar year (new pages only) and forward the film to NAVFACHQ Code DS02 by 1 March of the following year. A consecutive series of numbers should be assigned to all drawings for each project.

4.12 Drawing Revisions. Make revisions of drawings according to the requirements of DOD-STD-100. Provide a revision block on all NAVFACENGCOM project drawings. For all drawings prepared by Architect/Engineer (A/E) firms, the revision block shall include a separate column, "PREPARED BY." This column shall be used to indicate the organization that prepared the revision. The layout of the modified revision block shall be as shown in Figure 8. Where revisions to a drawing result in the preparation of a new drawing, a new NAVFACENGCOM drawing number shall be assigned and new approval signatures and registration seals shall be placed on the drawing.

4.13 Security Classification and Notation. For engineering drawings requiring security classification, conform to the requirements of the DOD Industrial Security Manual for Safeguarding Classified Information, DOD 5220.22M. No word, symbol or any combination which would disclose information in any established security category shall be used in drawing titles.

4.14 Reproducibility. Reproductions shall conform to the requirements of MIL-D-5480, Data, Engineering and Technical, Reproduction Requirements for. For normal applications, drawings should be made on polyester plastic (Mylar, Celanar, etc.) film, with pencils of sufficient density or with ink to assure clear reproductions.

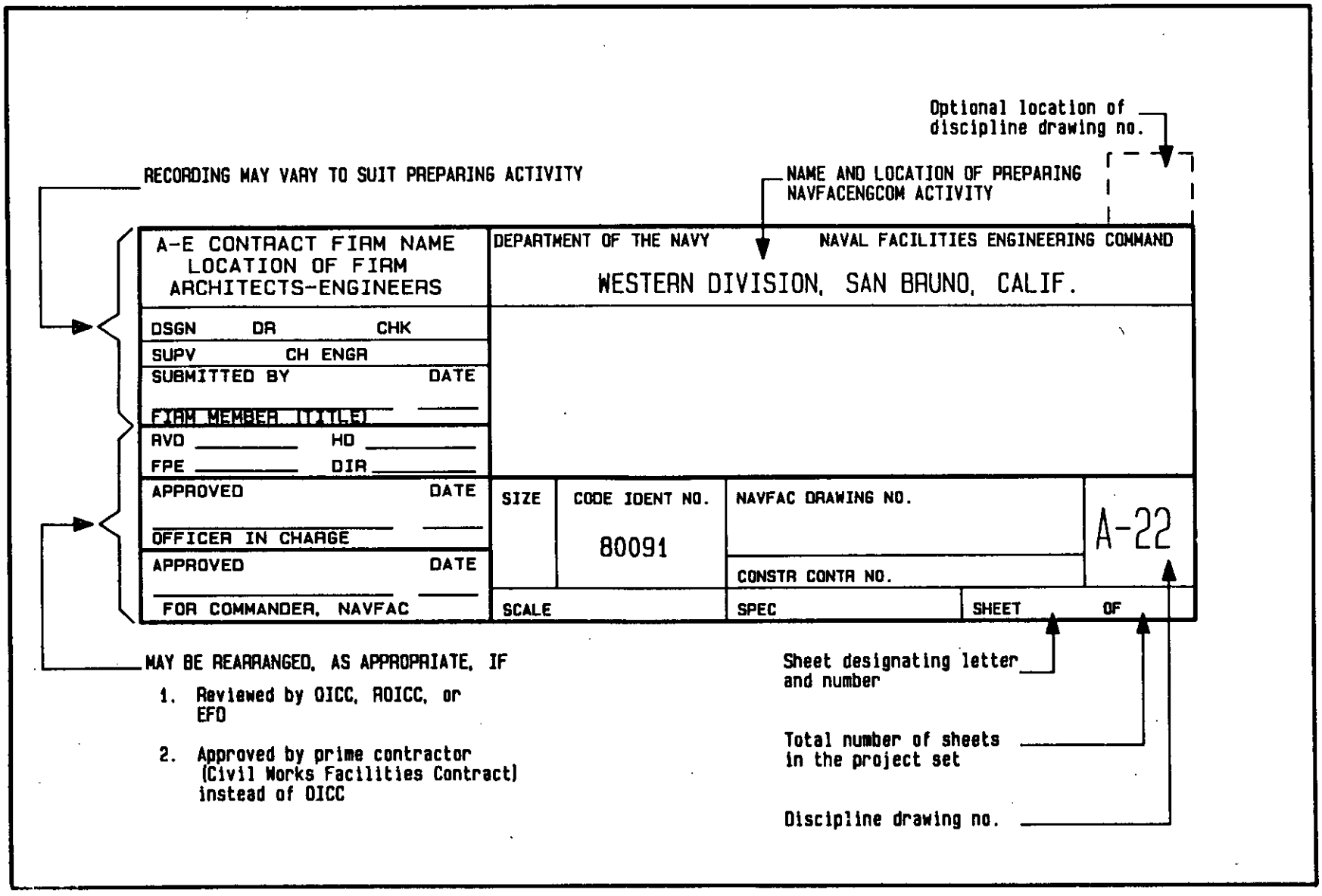


Figure 2
Title Block for Drawings Prepared by an Architect/Engineer Firm

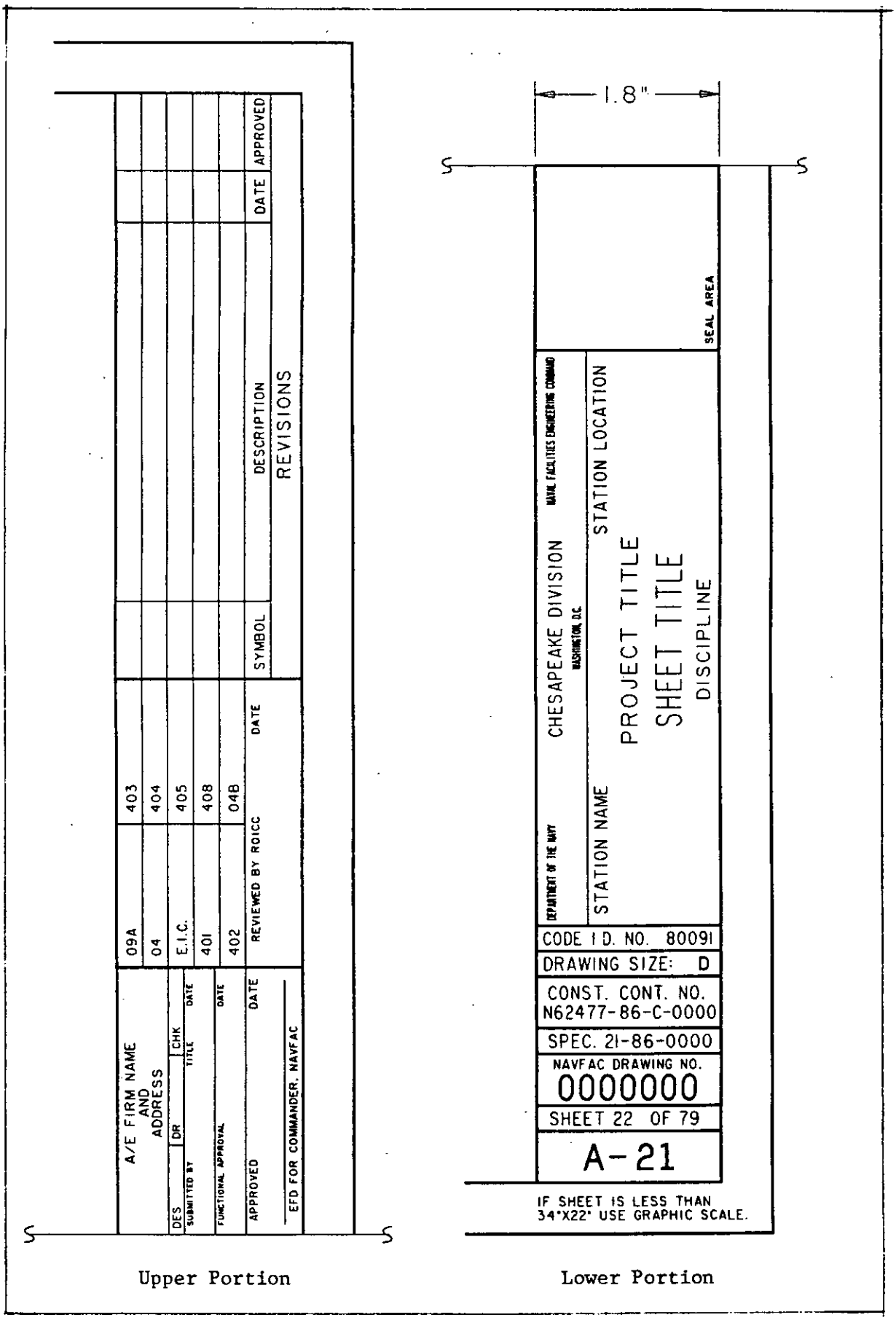


Figure 3
Vertical Title Block for Drawing Prepared by an Architect/Engineer Firm

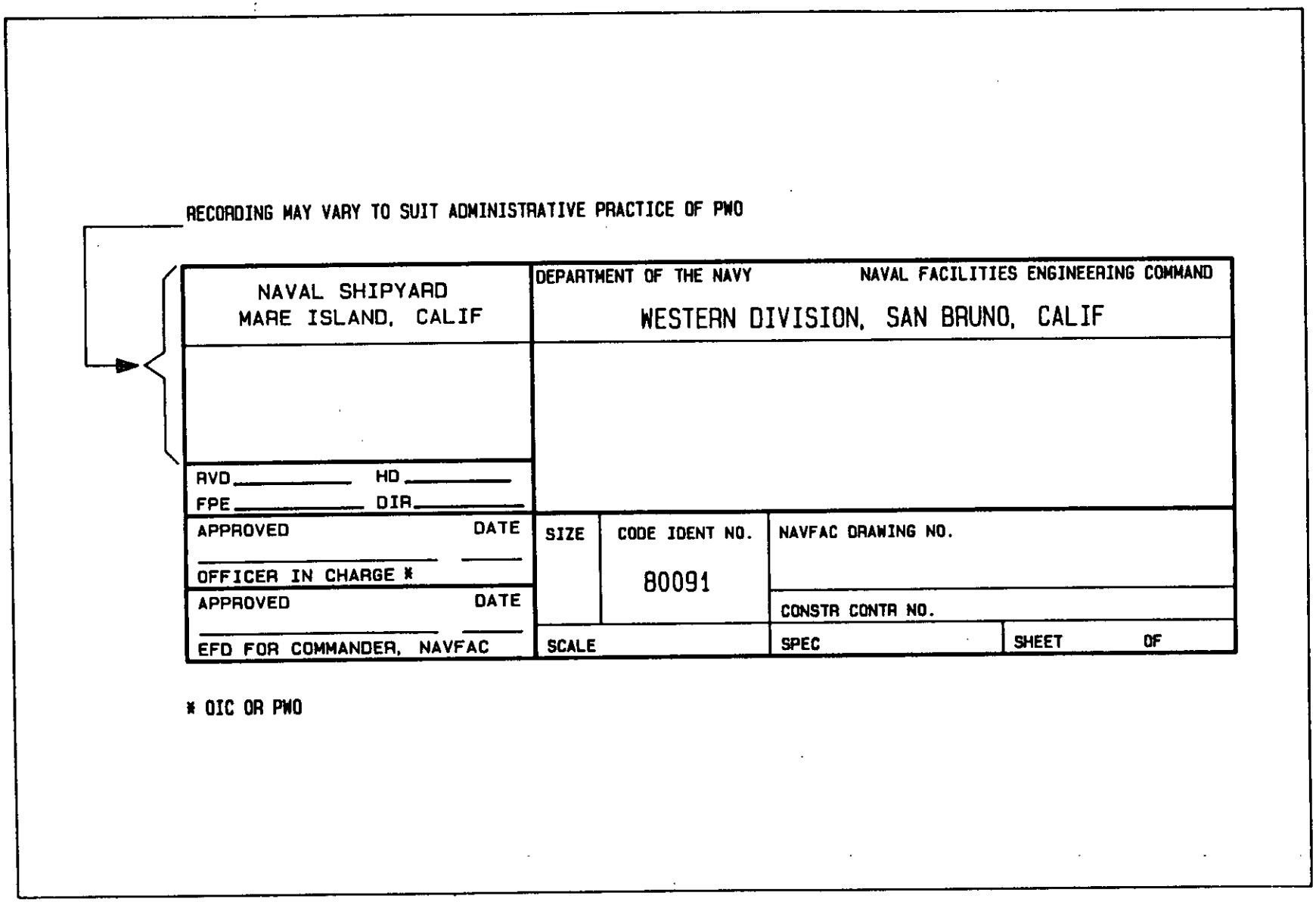


Figure 4
Title Block for Drawings Prepared by an Activity and Requiring EFD or OICC Approval on Behalf of the Commander, NAVFACENGCOM

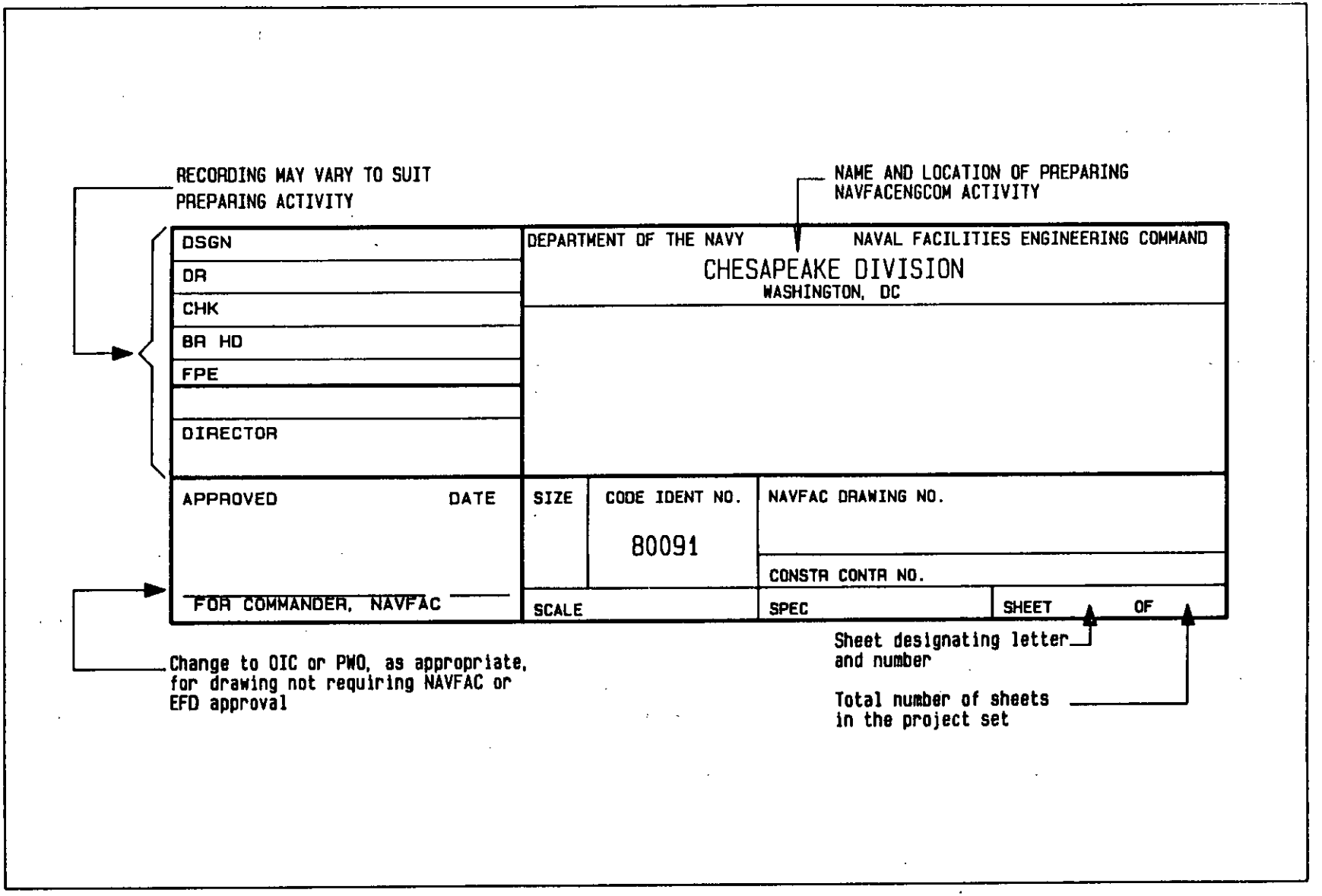


Figure 5
Title Block for Drawings Prepared by NAVFACENGCOM or NAVFACENGCOM Activity

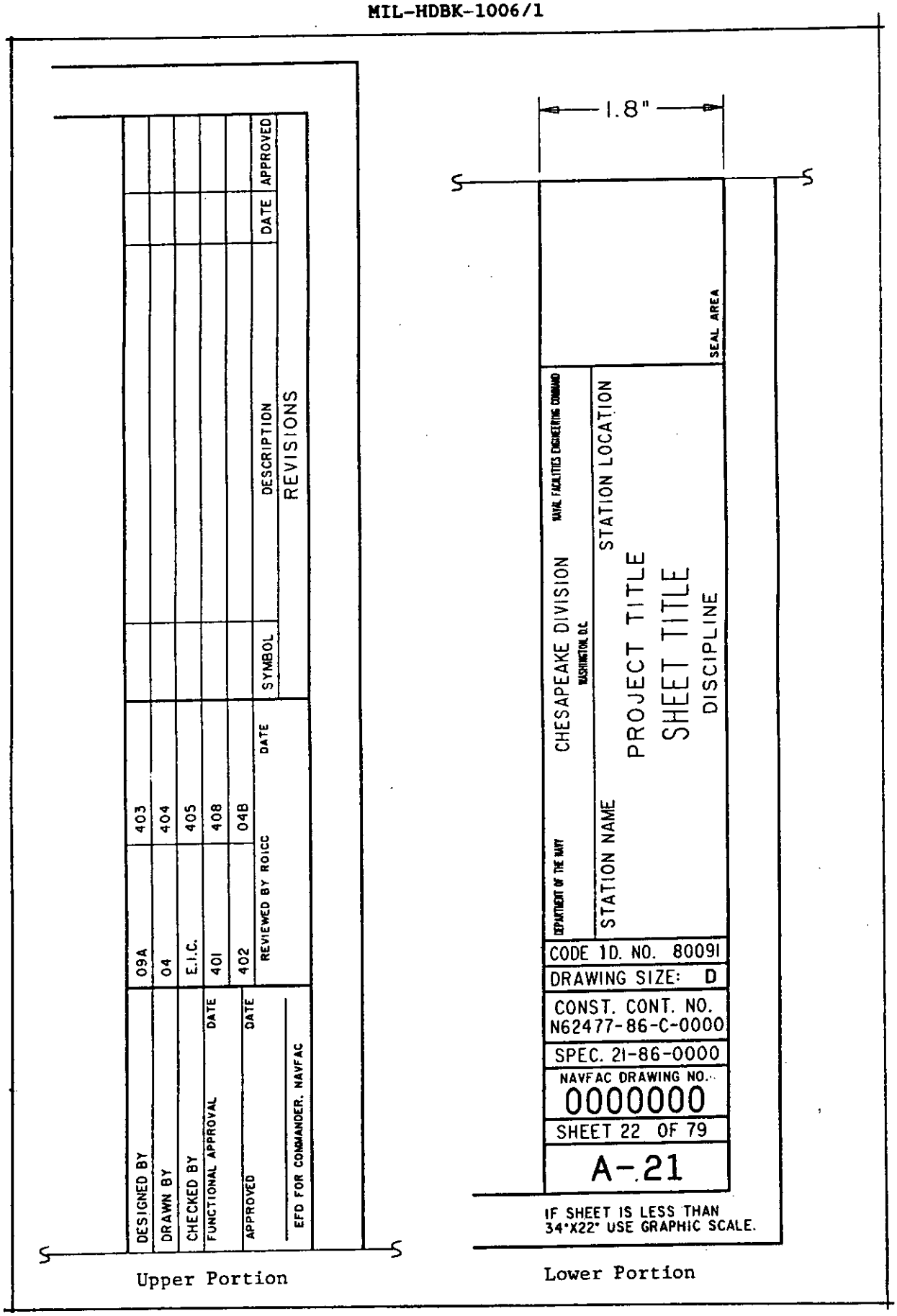
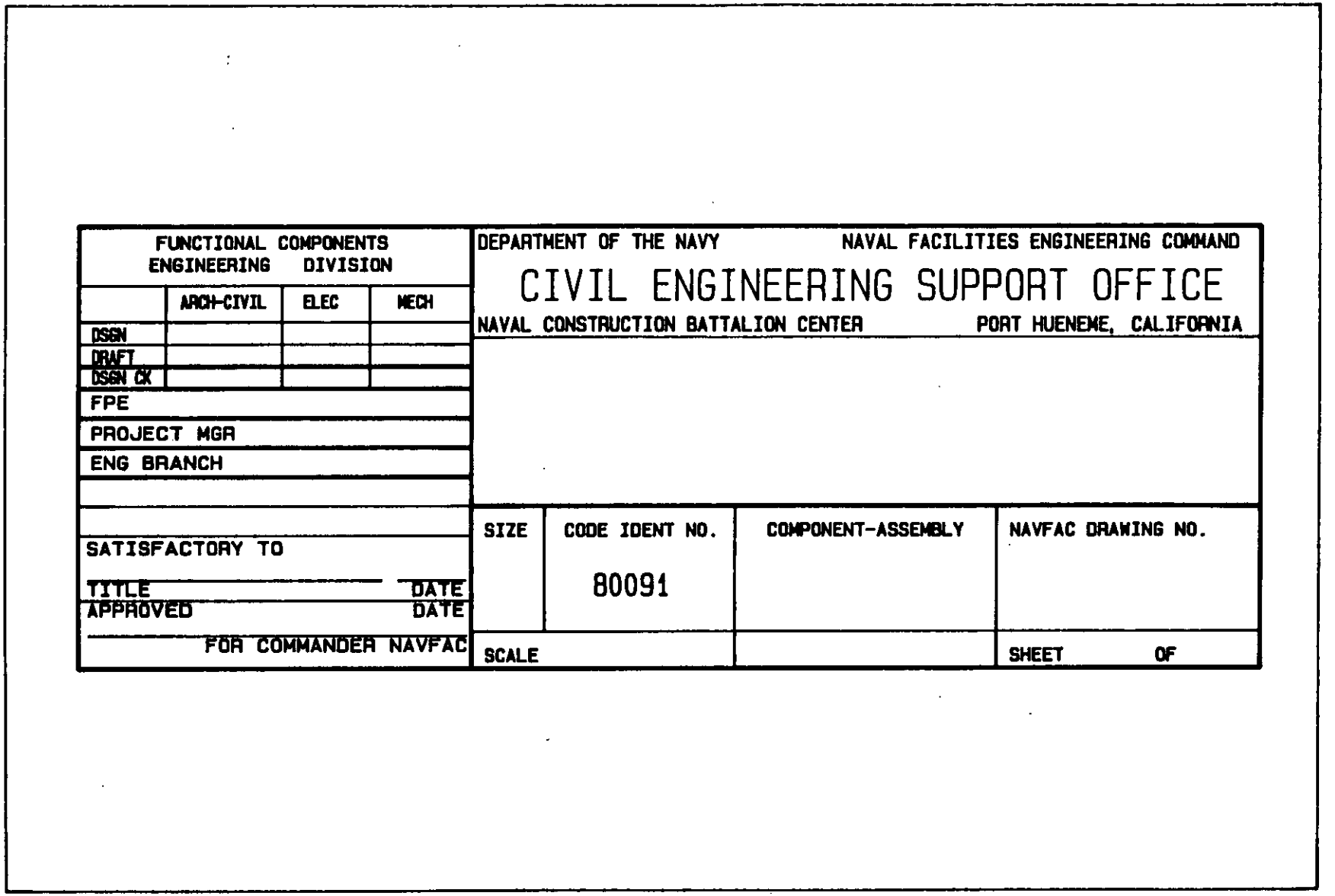


Figure 6
Vertical Title Block for Drawings Prepared by NAVFACENGCOM or NAVFACENGCOM Activity



FUNCTIONAL COMPONENTS ENGINEERING DIVISION			
	ARCH-CIVIL	ELEC	MECH
DSGN			
DRAFT			
DSGN CK			
FPE			
PROJECT MGR			
ENG BRANCH			
SATISFACTORY TO			
TITLE _____ DATE			
APPROVED DATE			
FOR COMMANDER NAVFAC			

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND

CIVIL ENGINEERING SUPPORT OFFICE

NAVAL CONSTRUCTION BATTALION CENTER PORT HUENEME, CALIFORNIA

SIZE	CODE IDENT NO.	COMPONENT-ASSEMBLY	NAVFAC DRAWING NO.
	80091		
SCALE			SHEET OF

Figure 7
Title Block for Drawings Prepared by NCBC Requiring Approval on Behalf of the Commander, NAVFACENGCOM (to be Used for Advanced Base Drawings)

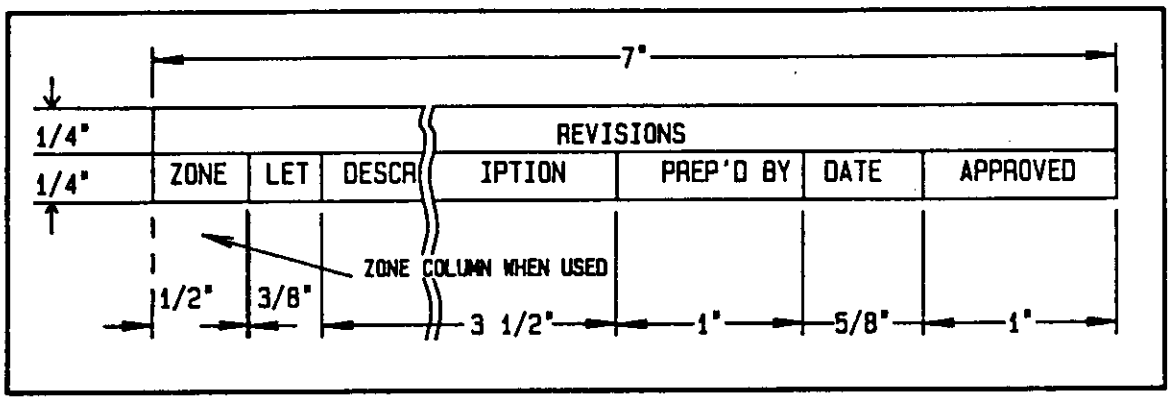


FIGURE 8
Revision Block For Drawings

a) Reproducibles shall be provided on 0.003- to 0.005-inch polyester plastic film by photographic methods, for the following types of drawings:

(1) Important structures, for which considerable duplication is expected;

(2) Drawings of complicated designs;

(3) Drawings that may require extensive changes during preparation;

(4) Drawings provided to the Government when the A/E retains the originals.

b) Reduced copies shall be direct-reading reproductions of a finished size, not smaller than one-half of the size of the original.

4.15 Graphic Scale. All NAVFACENGCOM drawings are to be provided with graphic scales, one for each scale used on the drawing. Locate graphic scales at the lower-right corner, with the words "Graphic Scales" directly over them. The correct graphic scales must be shown prominently on each drawing, as drawings are reduced in size and are not always in exact scaled proportions.

4.16 Distribution of Drawings. Copies of drawings shall be issued as follows:

a) Full-size prints to Government officials and employees when reduced-size prints are unsuitable for the required use.

b) Half-size prints to prospective bidders, but full-size prints can be purchased if desired (see NAVFAC P-68, Contracting Manual).

c) Full-size prints to contractor. Half-size prints can be provided when suitable for the required use.

d) Forward one set of full-size prints for all engineering drawings, dredge surveys, and reports for overseas ocean engineering projects to:

Director
DMA Hydrographic/Topographic Center
ATTN: SD (SDSCH)
Washington, D.C. 20315

4.17 Record Drawings. Record drawings shall be provided for all important permanent facilities including primary utility systems. Important permanent facilities are defined as follows:

a) All projects funded under Military Construction programs.
b) All underground utilities regardless of cost.
c) All fire protection systems regardless of cost.
d) All other projects, regardless of fund source, costing in excess of $250,000.
e) All other projects, regardless of the method of funding, that in the judgement of the Engineering Field Division Commander or Commanding Officer, would be needed for mobilization purposes.

4.17.1 Filming. Upon completion of record drawings, the approved original shall be filmed and distributed as indicated in Table 1. At this time, all reproducibles and previous films of the construction drawings will be destroyed, except for the project drawing films or reproducibles filed with the contract records. Record drawings in contract files are inviolate and shall not be changed.

Table 1
Drawing Distribution Chart

DRAWING TYPE	SUBMITTED BY	COPIES FURNISHED	DISTRIBUTION
Contract (Construction) and Revisions	EFDs - OICCs	Original Tracing	EFDs, OICCs Contract or Plan File
		Full-Sized Reproducibles	Station/Activity (and ROICC or PWO)
Record	EFDs - OICCs	Original Tracing or Transparencies	Station/Activity (PWO or PWC as applicable)
		Microfilm	CBC, Port Hueneme NAVFAC RECORD DRAWING FILM FILE ATTN: CODE 22 EFD and OICC Plan files
Shop Drawings or Product Data	EFDs - OICCs Activity	Original, Copies, or Microfilm	Station/Activity - EFD or OICC
Advanced Base	CBC, Port Hueneme, CA	Original Tracing	CBC, Port Hueneme (Code 155)
		Half-Sized Reproducibles	NAVFACENGCOM, CBC, Gulfport, MS, LANTDIV, PACDIV

4.17.2 Marking. Each record drawing should be plainly marked by a stamp or lettering adjacent to the title block, in the following manner:

RECORD DRAWING
DATE _____

4.17.3 Historical File. A historial file of record drawings is maintained at the Construction Battalion Center, Port Hueneme, CA. Design offices shall send 105-mm or 35-mm aperture-card film of all record drawings to the historical file. Film submitted must be batched and secured by project. Each batch must have a cover sheet or lead card that identifies the project by EFD, country or state, city, activity, facility (and building number, if appropriate), and NAVFAC contract number (if appropriate). The minimum identification on each individual film is:

a) NAVFAC drawing number,
b) Activity,
c) Facility,
d) Date.

Film submitted in format other than the one described will be returned for compliance. A copy of each letter transmitting record drawing film shall be forwarded to NAVFACENGCOM Code DS02.

4.17.4 Original Drawings. The original record drawings shall be retained in the permanent custody of the Station Commanding Officer or Public Works Center (PWC) Commanding Officer for stations supported by PWCs and should thereafter be maintained in a current status by local forces.

Section 5: PROJECT SPECIFICATION PREPARATION

5.1 Policy. Project specifications shall describe the performance of the work in a concise and coherent manner. Specifications shall state Government essential needs and describe all conditions that may affect the project. The person responsible for preparing the project specification must review this manual and personally contact the Specification Section/Branch (Code 406) at the beginning of each new project to ascertain that his/her guidance is current.

5.1.1 Coordination of Specifications and Drawings. Drawings and specifications must be coordinated to preclude inconsistencies or ambiguities between project specifications and drawings. Basically, the drawings should illustrate the extent, size, shape, and generic types of materials and the relationship between materials. The specifications should describe the materials, their quality and installation requirements, and the method of construction. The specifier must review the drawings during preparation and after their completion to assure that materials and systems appearing on the drawings have been covered in the specification and that all requirements to accomplish the work are adequately 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 and duplications between drawings and specifications must be eliminated. The terminology used in specifications and drawings must be identical.

5.1.2 Proprietary Specifications. Federal Acquisition Regulation (FAR), Paragraphs 10.002 and 36.202, ban the use of restrictive or proprietary requirements unless it is established conclusively that no substitute will serve the purpose. From time to time, a situation arises in which only a single product will perform the required function. In such cases, a request for authorization to specify the proprietary product must be forwarded, promptly, to a Level I Contracting Officer together with the pertinent facts of justification in order to avoid delay in the work. If such authorization is granted, the item should be specified by manufacturer's name and catalog number, followed by "and no other product will be accepted" or language of similar import. This statement is necessary to override the contract clauses that permit substitution of any supposedly equal product.

5.1.3 "Or Equal" Specifications. Specifying items by naming acceptable commercial products followed by the words "or equal" is permitted under the following conditions: (a) there are no Government specifications for the item, (b) the item is a minor part of the construction project, (c) the item cannot be adequately described because of technically involved construction or composition. In each instance, a minimum of three manufacturers shall be included in the description followed by the words "or equal." The essential features of the item must also be set forth in sufficient detail to establish the basis upon which the equality of nonlisted products will be determined.

5.1.4 Unrestricted Bidding. Specifications for procurements shall state only the actual minimum needs of the Government and describe the materials and installation in a manner that will encourage maximum free competition in bidding. Eliminate, insofar as possible, any restrictive features that might limit acceptable offers to one supplier's product or the products of a relatively few suppliers.

5.1.5 Experience and Warranty Clauses. Ordinarily, experience and warranty clauses are not included in the technical specifications (see NAVFAC P-68). Submit experience and warranty clauses contained in standard and guide specifications issued prior to April 1985 to a Level I Contracting Officer for approval prior to using them in a project specification. Experience, warranty, and related clauses in standard and guide specifications issued during and after April 1985 have been reviewed and approved by a Level I Contracting Officer and may be used without further approval or waiver.

5.2 Available Specifications. Considerable data are available to facilitate the preparation of project specifications and are included in a series of guide specifications covering most major elements of construction. Criteria for materials, equipment, and test methods are included in Government and non-Government specifications and standards. Both NAVFACENGCOM guide specifications and other specifications and standards are listed in NAVFAC P-34, Engineering and Design Criteria for Navy Facilities. The primary basis for developing the project specification shall be the NAVFACENGCOM guide specifications.

5.2.1 NAVFACENGCOM Specifications. Guide specifications NFGS (TS) series define and establish minimum criteria for construction, materials, and workmanship and shall be used as guidance in the preparation of project contract specifications. These NFGSs, though mandatory for use in preparing project specifications, shall be tailored as necessary to suit the work actually required by the specific project. In addition, guide specifications should be modified and edited to reflect the latest proven technology, materials, and methods.

5.2.2 EFD Regional Guide Specifications. These specifications are used in the same way as the guide specifications in the NFGS (TS) series but are used only in the area of the EFD jurisdiction. They are always numbered the same as the NFGS (TS) guide specification that has been used as a basis for the regional specification. The letter (capital) representing the EFD is added at the end of the specification number (e.g., NFGS-02513W, Asphalt Concrete for Vehicular Traffic Construction, Western Division, or NFGS-02200L, Earthwork, Atlantic Division).

5.2.3 Valid Guide Specifications. There is only one valid guide specification for a particular area at any time. It will be either a NAVFACENGCOM (NFGS or TS) series or an EFD regional series guide specification with the latest revision date of approval by NAVFACENGCOM. The latest revision date automatically cancels all specifications of the same number with a previous date. Only the NAVFACENGCOM series and EFD regional guide specifications are affected by one another and then only by the date and in the EFD regional area.

5.2.4 Department of Defense Guide Specifications for Military Family Housing. These specifications are no longer being maintained. They are a source of information for DOD Family Housing Standards, but because of their age, they should not be used as manuscripts for project specifications.

5.2.5 Standard (S-Series) Specifications. These are specifications for a small group of specialized structures that must meet rigid operational requirements of management commands and bureaus. An example of a standard specification is NFSS-M21, Magazine, Earth Covered Circular Composite Arch.

5.2.6 Other Specifications. The following specifications establish requirements mainly in terms of performance to assure competitive bids from the largest segment of industry. Referencing these documents in project specifications assures the procurement of economical facility components and services while considerably reducing the verbiage required to state such requirements.

5.2.6.1 Technical Society Specifications. These specifications include the requirements of several elements of the community that have an interest in the development and use of these documents. These include producers, consumers, and those representing the general public interest who actively participate in the work of such societies.

5.2.6.2 Trade Association Specifications. These documents contain the requirements among the companies within a given industry.

5.2.6.3 Manufacturer Specifications. These specifications contain the manufacturer's precise description for the manner and process for making, constructing or compounding, and using any items he manufactures.

5.2.6.4 Federal Specifications. Federal specifications contain precise descriptions for materials, products, or services used by all Federal agencies.

5.2.6.5 Military Specifications. Military specifications contain precise descriptions to cover items or services with features that meet special requirements of DOD.

5.2.6.6 Commercial Item Descriptions. Commercial Item Descriptions (CIDs) are a form of simplified product purchase descriptions for commercial off-the-shelf and commercial-type products for repetitive acquisition purposes. CIDs are intended to be used as an alternative to detailed Federal specifications. CIDs are brief and performance-oriented. They rely predominately on voluntary standards and are stated in such a way as to provide

adequate competition among acceptable commercial items. They include functional and performance requirements in the form of key salient characteristics, as required to define quality levels or intended application. CIDs are Federal documents administered by the General Services Administration (GSA).

5.3 Guidance. Project specifications shall be based on NAVFAC guide specifications and EFD regional guide specifications. These specifications have been coordinated thoroughly with industry and tested by use in many projects. Changes to the requirements should be made only when backed by sound engineering justification. Particular care must be taken to ensure that changes do not result in proprietary or unreasonable requirements.

5.3.1 Use of the Guide Specifications. Usually a project specification section is prepared by using the appropriate guide specification listed in NAVFAC P-34, modified to fit the project. Portions of the guide specification that cover work not included in the project shall be deleted. When portions of the work involved are not covered in a guide specification, additional requirements must be added to the project specification, as necessary, using language and form similar to that employed in the guide specification. Guide specifications shall be used only as manuscripts and SHALL NOT BE REFERENCED IN PROJECT SPECIFICATIONS. With corrections, additions, and deletions marked on them, the manuscripts can be used for direct typing of the project specification or for computer word processing edit of the guides to develop the project specifications.

5.3.2 Work Not Covered by Guide Specifications. Do not combine work covered by various NAVFAC guide specifications into one section unless the work to be covered is of a minor nature. If a NAVFAC guide specification is not available for a particular item, prepare a suitable section using the most recent NAVFAC guide specification format.

5.3.3 Organization. Every project specification shall have a title page (see Appendix D). A table of contents shall follow the title page and shall list each of the 16 divisions shown below and each section contained in each division.

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.	Specialties
Division 11.	Equipment
Division 12.	Furnishings
Division 13.	Special Construction
Division 14.	Conveying Systems
Division 15.	Mechanical
Division 16.	Electrical

The sections within these divisions will be prepared and numbered using NAVFAC NFGS or EFD regional guide specifications. Where there is no appropriate NAVFAC guide specification, an original section shall be prepared and numbered in accordance with the Masterformat (CSI Document MP-2-1). Division 1 shall include the appropriate contents of guide specification NFGS-01010, General Paragraphs, with 01010 as the section number. Section 01011, Additional General Paragraphs, will be written under the direction of the EFD with jurisdictional control, to include the special requirements particular to the site or project involved. Section 01400, Contractor Quality Control System (for projects with a CWE of $2,000,000 or more), and Section 01401, Contractor Inspection System (for projects with a CWE under $2,000,000), are included, plus Section 01560, Environmental Protection. Any additional section of a general requirement nature rather than a technical nature will be included in Division 1. Bidding information is included in NFGS 00101, Instructions to Bidders. This information is generally issued with the bid package and is not part of the contract.

5.3.4 Format. Edit draft material prior to final typing to reduce unnecessary words, phrases, and paragraphs. Final typing of project specifications shall be single-spaced on one side of 8-1/2- by 11-inch white bond paper. When project specifications are reproduced for formal advertising, the specifications are printed on both sides of 8-1/2- by 11-inch sheets. Colored sheets may be used for identification of different sections.

5.3.4.1 Numbering. Project specifications are to be identified by use of the number of the contract of which the specifications are a part, modified as follows:

a) The first six digits of the contract numbers will be replaced by the corresponding two-digit number representing the NAVFACENGCOM office handling the project as follows:

04	NORTHERN DIVISION, NAVFACENGCOM
05	ATLANTIC DIVISION, NAVFACENGCOM
06	SOUTHERN DIVISION, NAVFACENGCOM
12	WESTERN DIVISION, NAVFACENGCOM
14	OICC MID PACIFIC
21	CHESAPEAKE DIVISION, NAVFACENGCOM
25	HEADQUARTERS, NAVFACENGCOM
40	PACIFIC DIVISION, NAVFACENGCOM
41	OICC MARIANAS
42	OICC FAR EAST
43	OICC SOUTHWEST PACIFIC
67	OICC TRIDENT
69	OICC KINGS BAY

b) The instrument identification "C" will be dropped. For example, a contract numbered N62477-75-C-0001 would contain a specification identified as Specification No. 21-75-0001.

5.3.4.2 Page Layout. Figure 9 is an example of a project specification section illustrating the proper format. The example shows the beginning of Part 1, paragraph numbering, title words, and specification and page number locations. Each page shall have a minimum 1-1/4-inch wide margin on each side, a 1-1/4-inch margin at the top, and a 1-inch margin at the bottom of the page (except for the specification number on one line and the section with page number on a lower line, both centered horizontally on the paragraphs above).

5.3.4.3 Section Format.

a) Section Numbering and Titling. The first page of each section shall show at the top center the word "SECTION" in capital letters, followed by the five-digit section number. The section title shall be capitalized and centered directly beneath the section number heading as shown in Figure 9.

b) Paragraph Numbering. The text of the section begins with Part 1, General, and the first paragraph, numbered 1.1. Subsequent paragraphs are consecutively numbered 1.2, 1.3, 1.4, etc. Subparagraphs are numbered 1.1.1, 1.1.2, etc.; 1.2.1, 1.2.2, etc.; 1.1.1.1, 1.1.1.2, etc.; and so on. Generally, subparagraphs should be established only when there are to be two or more; e.g., 1.1.1, 1.1.2, etc., or 1.2.1.1, 1.2.1.2, 1.2.1.3, etc.

c) Footing and Paging. On the first page and on all subsequent pages, the project specification number shall be centered between the side margins at the bottom of the page. The five-digit section number followed by the chronological page number of that section shall be placed beneath the section number so that a 1/2-inch clearance remains at the bottom of the page.

Example: 05-76-1776
15609-1

Two lines below the last paragraph of each section, center the phrase "END OF SECTION."

d) Section Arrangement. Each technical section follows the Construction Specification Institute (CSI)-recommended three-part section format. The first part, General, includes requirements of a general nature. The second part, Products, addresses the products or quality of materials and equipment to be incorporated into the work. The third part, "Execution," provides detailed requirements for performance of the work.

(1) For sections that provide options for either factory or field fabrication of components and systems, Part 1 would be General and Parts 2/3 would combine products and execution. Examples of this might be sections covering miscellaneous metal or mechanical work such as refrigeration equipment.

(2) For 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 only furnished by the contractor but installed by the owner or a section that refers to some other section for installation.

SECTION 09650

RESILIENT FLOORING

PART I - GENERAL

1.1 APPLICABLE PUBLICATIONS: The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the references thereto:

1.1.1 Federal Specifications (Fed. Spec.):

P-W-000A(2) Xxxxxxxxx Xxxxxxxxx, Xxxxx Xxxxxx

P-F-000A Xxxxxx Xxxxxxxx Xxxxxx Xxxx XxxxXxxxx

RR-T-000A Xxxx Xxxxxxx Xxxxxx Xxxx Xxx Xxxxxx

SS-T-000B Xxxxxxxx Xxxxxxxx Xxxx Xxx Xxxxxxxx Xxxxxxx Xxxxxx Xxxxxxxxxx

SS-W-00A Xxxxx Xxxxx Xxx Xxxxxx Xxxxxxxxxx

MMM-A-000B(1) Xxxxxxx Xxxxxx Xxxxxxxx Xxxxx Xxx

MM-A-000A Xxxxxxxxx Xxxxxxx Xxx Xxxxx Xxxx Xxxxxxxxx

1.1.2 National Fire Protection Association (NFPA) Publication:

XX Xxxxx Xxxxx Xxx Xxxxx Xxxxx Xxxxxx

1.1.3 Underwriters Laboratories, Inc. (UL), Publication:

Xxxxx Xxx Xxxxxx Xxxxxx Xxxxxx Xxxxx

1.2 SUBMITTALS:

1.2.1 Samples: Xxxxx xxx xxxxxx xx xxxxxxx xxx xx xxx xx x xxx.

(1) Xxxx xxxx xx - xxxx xxx x xxx xx.

(2) Xxxxx x x x - xxx x x xxxx.

1.2.2 Manufacturer's Installation Procedures: Xxxxx xxxxx xx xxxxx xxxx xxxxxx xxx xxxxx xx x xxxxxxx x x xx x xxxxxxx.

05-76-1776

09650-1

Figure 9
Example of Specification Page Layout

(3) For sections that involve labor only, Part 1 would be General and Part 3, Execution. Part 2, Products, should be listed and a statement such as "None required" included. Examples could be a section on clearing and grubbing or stripping of top soil.

e) Sentence Construction. The simple imperative mood should be used for an economy in words. This style is used for instructions covering installation of products and equipment and is concise, understandable, and readable (e.g., "Apply two coats of paint to each exposed surface"). The indicative mood, passive voice requires the use of "shall" in almost every statement and can cause unnecessary wordiness. It should be used only where necessary to emphasize a point or where the simple imperative mood is not appropriate (e.g., "Two coats of paint shall be applied to each exposed surface"). It is highly desirable to reduce verbiage in a specification without loss of meaning or content. Streamlining should be used to list materials, reference standards or specifications, and other itemized information as shown in the following example:

"Conform to the following material requirements:

Portland Cement: ASTM C150, Type 1
Aggregate: ASTM C33."

5.3.5 Sketches. Generally, sketches and drawings should be included on the project drawings and not in the specifications. When sketches are to become pages of the specifications, they shall be drawn on sheets that match the specification's page size and placed at the end of the section referenced. The page area used for the sketch (including the title) shall be the same window size as that for a project specification. They should contain the same numbering and identification data as required for typed pages and should be cross-referenced in the technical paragraphs. Sketches must have EFD approval prior to inclusion in specifications.

5.3.6 Referenced Specifications. The majority of materials and equipment are covered by adequate specifications, which must be referenced appropriately in the project specifications. NAVFAC P-34, Engineering and Design Criteria for Navy Facilities, lists specifications referenced frequently in NAVFACENGCOM projects. In the selection of a reference specification, the most adequate document should be chosen. In accordance with the FAR, nationally recognized industry and technical society specifications shall be used whenever practicable to assure that the requirements are compatible with current industrial practices and manufacturing resources. If industry documents are unsuitable, applicable Federal or Military Specifications shall be used to describe the requirements. When use of nationally recognized industry standards or Federal and Military Specifications is not practicable, contractors shall be required to use materials and equipment satisfying good commercial standards available from local commercial sources. Nationally recognized industry and technical society specifications and standards are first in the order of precedence. Federal and Military Specifications and Standards are second, followed by good commercial standards, with the precedence subject to suitability.

5.3.7 General Rules for References. Certain kinds of specifications form basic references for project specifications, while others are used merely in the preparation of manuscripts. Specific applications are indicated in paragraphs below. When specifications are referenced in project specifications, the following rules shall apply:

a) Specifications referred to are listed in the paragraph entitled Applicable Publications at the beginning of each section of the project specifications, by number and complete title, including all addenda, amendments, errata, and approval dates. List in the Applicable Publications paragraph only those publications referred to in the technical paragraphs of the section. Delete publications not referenced. List the letter or date, as appropriate, of the current edition of the referenced publications. General identification such as "the issue in effect on the date of the solicitation" or similar language shall not be used.

b) When a specification is referenced in other than the applicable publications paragraph, the applicable or nonapplicable portions shall be identified (whichever is more appropriate) to avoid misinterpretation by the contractor of the intent of the reference. These references should always include only the basic number and specifics such as type and grade and not the revision or other change identification.

c) Avoid reference to specific paragraphs in the specification except for unusual cases, since it limits the requirements to the paragraphs referenced.

d) Avoid repeated references to a specification within the same section.

e) Read carefully all notes on the use of the referenced specifications.

f) When only a few requirements of a referenced specification are applicable, the requirements should be included in the project specification and the reference should be omitted.

5.3.8 Abbreviations and Symbols. Those that are generally understood and accepted and can be used economically are acceptable: e.g., psig, cfm, kw. (The use of ft., in., lbs., and % do not offer great savings.) The use of symbols is undesirable for three basic reasons: (1) most symbols are difficult to produce on a typewriter, (2) they frequently have more than one meaning, and (3) the typist may not know what is intended and, therefore, type an improper symbol. Foot ('), inch ("), degree (o), pound, and number (#) should be written out, except that number may be abbreviated (No.). In the text, it is preferable to spell numbers except where they give dimensions. For example "10 buildings," "100 feet long"; however, "1" and "0" where used singly shall always be spelled out. Never use both the written and numerical figure: "ten (10)." In general, abbreviations or symbols shall be avoided.

5.3.9 Contract Parties. Do not designate part of the work to be performed by a particular subcontractor (e.g., the plumbing contractor). The Government recognizes only one contractor (the prime/general contractor), and it is the contractor's responsibility to divide up the work. The project specification should refer only to the contractor and to the Contracting Officer.

5.3.10 Demolition and Removals. Generally, specify only in a separate section titled DEMOLITION AND REMOVALS. Do not specify removals (and relocations) in the technical sections. The technical sections shall include only new work. In the section titled DEMOLITION AND REMOVALS, the paragraphs describing items to be relocated should reference the appropriate technical section, if there is one, for the installation of the item in its new location. (When light fixtures are to be relocated, a statement should be included in the paragraph on relocating light fixtures to the effect that relocated light fixtures shall be installed in the new locations in accordance with the applicable requirements of Section 16402, INTERIOR WIRING SYSTEMS.)

5.3.11 Common Errors. There are many phrases and statements used in the specifications and placed on drawings that are considered satisfactory in professional architectural and engineering practice outside of NAVFACENGCOM, but are not acceptable in the preparation of documents for NAVFACENGCOM. The following instructions cover frequent errors in phrasing:

a) When describing the extent of work, do not write "the work consists of"; write "the work includes."

b) Normally, it should not be necessary to reference accompanying drawings, but when necessary, use the words "as shown," "as indicated," or "as detailed." When an approval by the Contracting Officer is required, use the term "as approved." a clause titled Additional Definitions under contract clauses defines the meaning of these and similar terms.

c) Do not use the expression "to the satisfaction of the Contracting Officer," or "satisfactory to the Contracting Officer." The contract states specifically that all work must meet the approval of the Contracting Officer.

d) The two parties to the contract are (a) the Government, represented by the Contracting Officer, and (b) the contractor. Therefore, do not use such expressions as "subject to the approval of the architect," "When in the opinion of the architect," "this contractor," "mason," or "subcontractor."

e) Do not use "etc." - the term is too indefinite for bidding and inspection purposes.

f) Minimize the use of cross-references and, in no case, use paragraph numbers for this purpose. If necessary to refer to a particular paragraph, do so by its title and the section under which it is to be found. Cross-references such as the following are superfluous: "Painting of the woodwork is covered under 'painting'" or "Painting is specified hereinafter."

g) Do not place upon the contractor the responsibility for the possible inaccuracy in, or the lack of, information on the part of the Government. For example, 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." The Government is responsible for furnishing accurate and sufficient information to bidders or contractors.

h) Do not include data and information required under each section or paragraph covering equipment. Include data and information required under Division 1, General Requirements, of the project specifications. The standard Government warranty is covered in the contract clauses of the contract. Only an extended warranty (longer than 1 year) should be included in a technical section.

i) Do not set up a paragraph in the various sections titled "work not included." Specify the work that is included under the respective sections.

j) Misuse of words.

(1) Do not use redundant or superfluous wording such as "conforming to," "all," and "type."

(2) Do not confuse "either" and "both," such as "sheet metal shall be painted on either side." It should read, "sheet metal shall be painted on both sides." "Either" implies a choice.

(3) Do not confuse "or" and "and," such as "it shall be free from defects of workmanship and material that would impair its strength or durability." Interchanging the words "and" and "or" in this sentence results in an entirely different meaning. The term "and/or" has no legal meaning. It is contractually unenforcable and shall be avoided.

(4) Words having varied or indefinite meanings should be avoided.

Examples:

Do not write: "The equipment shall be removed and replaced as indicated."

Write: "Remove the equipment prior to the alteration of the building and reinstall after completion."

Do not write: "The existing culverts shall be replaced as indicated on the drawings."

Write: "Remove the existing culverts and reinstall in the new locations."

Do not write: "The electrical wiring shall be replaced," as this implies reinstallation of the old wiring.

Write: "Remove the old and install new wiring."

(5) The word "provide" is defined by the clause titled Additional Definitions of the contract clauses as furnish and install. When material and equipment are furnished by the Government, directly or under other contracts, for installation by the contractor, the term "install" should be used. However, the contractor may be required to "provide" foundations, fastenings, or certain equipment 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 material in question.

5.4 Standard (S-Series) Specifications. NAVFACENGCOM standard specifications form the basis for project specifications. When using them, the following should be observed:

a) Read and carefully follow all notes on the removable preface sheets of each standard specification.

b) When necessary to modify requirements of a standard specification for reasons other than to suit local conditions, obtain specific authorization from NAVFACENGCOM Code 04.

c) Modifications to ammunition and explosive storage standard specifications and drawings shall not be made without prior approval of NAVFACENGCOM Headquarters. Magazine designs have been tested for explosive resistance, and modifications of the design are controlled by the Department of Defense Explosive Safety Board.

d) Use additional sections of NFGS listed in the notes to the standard specification to develop a complete project specification.

Section 6: DRAWING/SPECIFICATION REVIEW AND APPROVAL

6.1 Review and Approval Procedures.

6.1.1 Program Dynamics. Due to the continuing increase of construction costs, it is the mandate of Congress and OSD that military construction projects be designed, bid, and constructed as rapidly as possible. This exerts continuing pressure toward maximum efficiency of the design process. Although reviews are necessary to ensure that designs meet both user functional requirements and NAVFAC technical requirements, these reviews must be carried out in the least possible time. This will ensure the minimum adverse cost effect on the individual project, as well as on the entire yearly group of MCON projects assigned to NAVFACENGCOM EFDs. Customer inputs on a project late in the design process may have to be given less than optimum attention for the financial benefit of all the projects in the same program year.

6.1.2 Review and Approval of Project Drawings.

6.1.2.1 Schedules and Reviews. Drawings, specifications, and cost estimates shall be reviewed in regular phases. The magnitude of technical review and number of phases will vary with the type of project. Since the architect/engineer firm is responsible for the technical design, the reduction of detailed technical review can save significant time and allow an early construction contract award, lower cost, and earlier beneficial occupancy of the facility. Generally, the work will consist of schematic, first (approximately 35-percent completion), second (100-percent completion), and final (complete) phases. All required engineering studies and analyses such as energy analysis and life-cycle cost studies should take place during the first (35-percent) design phase, and the design documents as outlined in Appendix A should be developed for the facility ultimately to be constructed. All comments on the functional aspects of the design must be resolved by the EFD to the satisfaction of the activity or be brought to the attention of the major claimant, systems command, or NAVFACENGCOM not later than the 35 percent design stage.

6.1.2.2 Liaison Between Activity and EFD. There should be adequate liaison between the activity and the EFD through participation by appropriate activity personnel in review of design through the 35-percent stage. The EFD Design Division is responsible for all architectural and engineering aspects of the project to ensure reasonable facility cost appropriate for the functions to be performed. The activity, together with the systems command or major claimant as deemed necessary, shall review the functional aspects of the facility design developed by the EFD. All required changes shall be resolved not later than the 35-percent stage. Change of functional requirements after the 35-percent stage will seriously affect the completion date and design cost of the project. When the 35-percent design is complete, it should be submitted to the user/customer activity for review and acceptance as to the functional requirements of the user. A "Satisfactory to" signature should be obtained in the space provided on each applicable sheet. The customer should be advised that no further functional input may be accommodated due to time constraints. If purely technical comments are offered by the user, the ultimate responsibility of NAVFACENGCOM for these features should be explained.

6.1.2.3 Reviews for Health Hazards During Facilities Design Process. For all facilities projects that involve potential health hazards such as toxic materials, non-ionizing radiation, noise, or other health hazards, the appropriate Navy Medical Command (NAVMEDCOM) activity listed below shall be consulted. The NAVMEDCOM activity is required to participate in design reviews and reviews of plans and specifications for these projects. The reviewing activity and reviewer shall be identified on all documents and drawings. The NAVMEDCOM activity will ensure that engineering designs properly consider and provide for adequate environmental controls for the elimination of health hazards. Use the above review process for all medical facility designs in excess of $1 million.

NAVMEDCOM ACTIVITIES PROVIDING INDUSTRIAL HYGIENE TECHNICAL ASSISTANCE

Naval Medical Command Regions

European Region, London, England
Northeast Region, Great Lakes, IL
National Capital Region, Bethesda, MD
Southeast Region, Jacksonville, FL
Mid Atlantic Region, Norfolk, VA
Northwest Region, Oakland, CA
Southwest Region, San Diego, CA
Pacific Region, Barber's Point, HI

6.1.2.4 Quality Assurance of A/E-Produced Plans and Specifications. In addition to the normal technical adequacy review, the EFD shall develop and implement a procedure to establish that the A/E has accomplished the required final coordination review. Perform at least a spot-check of the interdisciplinary coordination of the final plans and specifications. Requiring the A/E to include the final coordination review check-set of plans and specifications with the final submittal is an acceptable way to verify performance of adequate quality control(QC). Other acceptable methods may exist. If the spot-check or other procedure indicates inadequate QC by the A/E, return the plans and specifications for rework. Do not process payment for final plans and specifications until adequate QC has been accomplished by the A/E.

If design errors or omissions are found, return the plans and specifications to the A/E for rework. Do not, except under unusual circumstances and with careful documentation, direct a specific correction or make a correction with in-house personnel, thereby possibly assuming responsibility for the design.

Specifically evaluate the A/E's QC performance in both the post-design completion and the post-construction completion A/E performance evaluations for consideration in future selection actions.

6.1.2.5 Seabee Projects. All projects scheduled for accomplishment by naval construction forces shall be reviewed at the 35-percent design stage by COMCBLANT or COMCBPAC, as appropriate, for construction methods or procedures only.

6.1.2.6 Scope Changes. At the earliest possible stage of design, the EFD shall notify the activity and the major claimant or systems command in writing of any potential need for scope changes. The notification shall include a description of the changes, with assessment of the impact of the changes on the facility, a revised cost estimate, and the appropriate follow-on actions required. The EFD letter shall include all information pertaining to the potential scope changes in accordance with the requirements of NAVFACINST 11010.49, Limitations on Scope Change and Authorization Escalation of a Military Construction Project, and address the current working estimate (CWE).

6.1.2.7 ROICC Review of Contract Drawings. The ROICC shall review the plans and specifications at the 35 percent and 100 percent submissions. The review shall be limited to project constructability (site problems, existing obstructions or proposed utilities, new construction methods, proposed contract time for construction, omissions, discrepancies, and coordination problems that could lead to change orders or construction difficulties).

6.1.2.8 NAVFAC Review of Field Drawings. Contract drawings and specifications prepared under the direction of the EFD are reviewed and given final approval by them. Review by NAVFACENGCOM will be made only when requested by the EFD or by NAVFACENGCOM. Such reviews will be limited to review of conformance to Government criteria.

6.1.2.9 Bid Packages. After EFD approval of the completed design, a complete bidding package shall be delivered to the user/customer and the ROICC. It is desirable to provide them with a final briefing on the content and function of the design.

6.1.2.10 Marine Corps. Thirty-five percent preliminary drawings, specifications, and cost estimate (see Appendix A) for all Marine Corps-funded projects shall be submitted to the Commandant, Marine Corps (CMC), Code LFF, for review as to compliance with functional requirements. One set shall be furnished to the Marine Corps installation, one set to the CMC, and one set to NAVFACENGCOM for information. Comments or approval on the functional aspects of the design shall be made by letter and discrepancies resolved by the EFD to the satisfaction of the CMC. One complete set of the final drawings (half-size preferred), specifications, and cost estimate shall be sent to the CMC, the Marine Corps installation, and NAVFACENGCOM for information concurrent with advertisement of the project for bids.

6.1.2.11 Space and Naval Warfare Systems Command (SPAWAR). Drawings for SPAWAR projects are of two types: (1) drawings of the building, site, and other facilities and (2) drawings for the electronic and other equipment to be installed within the building. Although type (2) drawings are sometimes prepared by SPAWAR, both types should bear standard NAVFAC title blocks and drawing numbers. On drawings that require SPAWAR approval, a box shall be appended to the left of the title block for SPAWAR signature and space provided for SPAWAR cross-reference drawing number.

6.1.2.12 Civil Works Contracts. NAVFACENGCOM or the delegated EFD approves plans and specifications prepared for civil works subcontracts. Civil works contract drawings shall be assigned NAVFAC drawing numbers and shall be

approved and signed as "satisfactory to" the prime contractor of the particular Navy industrial plant for whose use the facility is provided.

6.1.2.13 Approval by Other Government Organizations. Approval of drawings for projects of other Government organizations or approval of modifications or revisions of drawings prepared by such organizations will be required as follows:

a) When NAVFACENGCOM drawings are prepared for construction projects for other Government departments or agencies, fully developed schematics shall be submitted to them for formal approval and signature. Drawings prepared by or under the direction of NAVFACENGCOM shall be approved by that Government organization for functional and operational sufficiency. Approval by other Government departments or agencies shall be indicated by appropriate signature in a "satisfactory to" supplementary block located in accordance with Figure 10.

b) When definitive, standard, or project drawings of other Government departments or agencies are used by NAVFACENGCOM for design of projects for those departments or agencies, any modifications or revisions made to such drawings shall be approved by the department or agency concerned, unless NAVFACENGCOM has been authorized otherwise.

6.1.3 Signatures Required. Before drawings and specifications are submitted for formal approval, they shall be signed by the individuals directly responsible for the accuracy and sufficiency of the data included therein.

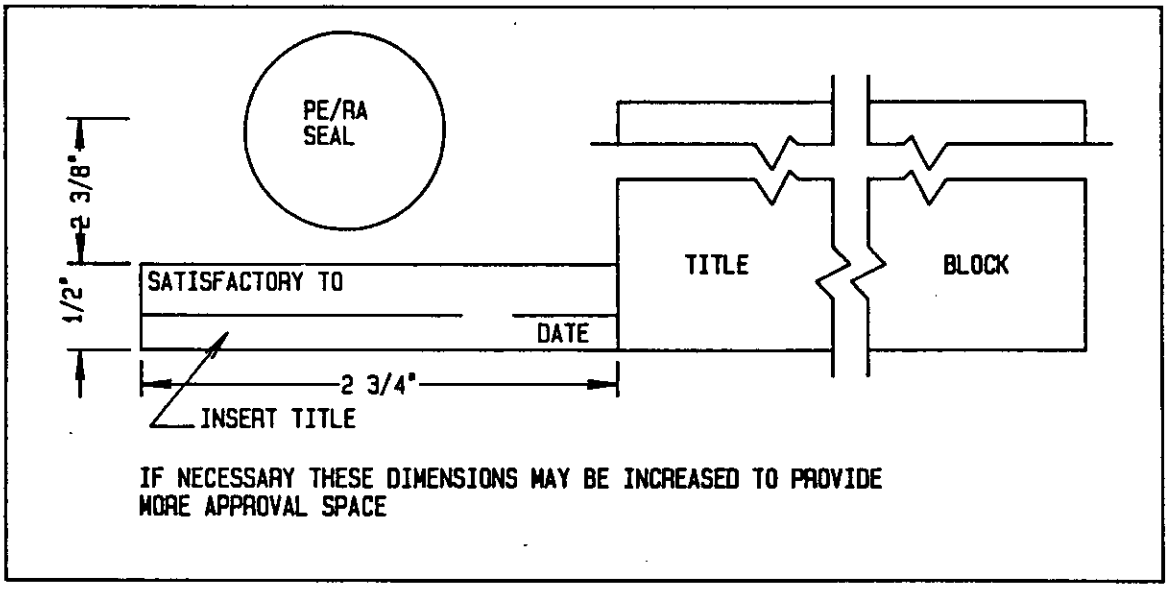


Figure 10
Supplementary Block

6.1.3.1 Drawings Prepared In-House. All designers, draftsmen, and checkers will letter their surnames in the space provided on each drawing of their direct concern. The designer and checker shall not be the same person. All applicable drawings should be approved and signed by the EFD fire protection engineer. All Branch Heads will sign their surnames on each drawing as their approval of their particular discipline. Only registered professional engineers or architects are authorized to certify technical adequacy, and P.E. or R.A. shall be indicated with the signature. The EFD or OIC Design Directors will sign their surnames on the title or index drawing sheet(s) of the project drawings. Drawings prepared by NAVFACENGCOM, EFDs, OICs, OICCs, PWCs, CESO, NCBC, or PWDs may be stamped with the registration seal of the Design Director or the individual responsible for the design when the seal is authorized by the state where the project is to be constructed.

6.1.3.2 Project Specifications Prepared In-House. Place the surname(s) of the preparer(s) on the cover sheet. The Specifications Branch Head will sign or initial the cover sheet.

6.1.3.3 Drawings Prepared by an A/E. All NAVFAC drawings prepared by an A/E contractor shall be signed by company employees with comparable responsibility to the NAVFACENGCOM individuals described in the previous paragraph and in the same manner.

The engineer or architect signing the drawings must be registered in the state of record for the A/E company or the state of the proposed construction -- as a P.E. or R.A.

In addition, the drawings shall be signed by a responsible person of corporate status in the A/E firm and may be stamped with his/her registration seal when the seal is authorized by the state where the project is to be constructed.

6.1.3.4 Project Specifications Prepared by an A/E. Place names and signatures on cover sheet of company employees having responsibility commensurate to NAVFACENGCOM individuals described in the preceding paragraph. In addition, the cover sheet shall be signed by a corporate member of the A/E firm or by a responsible individual with corporate responsibility. The Specifications Branch Head shall sign the "Approved by" line on the cover sheet.

6.1.3.5 Formal Approval by or for the Commander, Naval Facilities Engineering Command. Authority and responsibility for formal approval of drawings and specifications by or for the Commander, NAVFACENGCOM, shall be vested in the following authorized officials and shall be restricted to officials registered as professional architects and engineers.

a) NAVFACENGCOM. The Assistant Commander for Engineering and Design or the Deputy Assistant Commander.

b) EFDs. The Commander or Commanding Officer, Deputy Commander or Executive Officer, Head of the Acquisition Department, or the Director of the Design Division to the monetary level stipulated in their delegation of signature authority.

c) OIC (ROIC) and OICC (ROICC). The designation carries with it the authority and responsibilities indicated in NAVFAC P-68, Contracting Manual, unless otherwise indicated by NAVFACENGCOM.

6.1.4 Title Block. The proper title block format for the drawings should be selected from the title block illustrations. (See Figures 2 through 4.) A proper approval signature shall appear on the title or index drawing sheets and on the cover sheet of the specifications. Individual drawings in each design package may be signed by the formal approval authority or the name and title of the "authority" may be stamped on each of these drawings.

6.2 Shop Drawings.

a) The A/E (or in-house design office) shall be tasked to provide the contracting Officer with a list of shop drawings proposed for review and the reasons why the reviews are needed.

b) The Design EIC or AIC, the Construction Division, and the Field Contract Administration AOIC shall carefully review the list to ensure that the A/E (or in-house design office) reviews only those shop drawings that have an impact on design. Included should be those showing structural connectors, installation details of structural members, and others that relate to structural strength, integrity of a system, or the safety of personnel or are of significant design or cost importance.

c) On contracts using the Contractor Inspection System, most if not all submittals should be contractor-reviewed and Government-approved. Government approval, in most cases, should be based on review of the submittals by the A/E or the EFD Design Division. Specialty items like fire protection, sprinkler and security systems, cranes, and elevators may be considered critical enough to justify concurrent A/E and Government review prior to Government approval.

d) On contracts using the Contractor Quality Control System, most submittals should be contractor-approved. The Government may reserve the right to approve certain critical items such as fire protection, sprinkler and security systems, cranes, and elevators. The approval of most submittals by the contractor does not preclude subsequent review by the Government as a quality assurance measure. Government review of contractor-approved submittals should be directed toward those specification divisions involving a completion of design and maintaining safety, security, and health. The most critical specification divisions for review are normally:

Division 3 - Concrete	Division 8 - Doors, Windows, and Glass
Division 4 - Masonry	
Division 5 - Metals	Division 14 - Conveying Systems
Division 6 - Carpentry	Division 15 - Mechanical
Division 7 - Moisture Control	Division 16 - Electrical

Approximately 75 percent of the submittals in Divisions 15 and 16 and 50 percent of the submittals in Divisions 3, 4, 5, 6, 7, and 8 should be reviewed.

e) The specifications shall list which shop drawings will be submitted and the number of copies to be submitted. The number of copies required will vary according to the magnitude of the project and the number of reviewers.

f) Shop drawings shall be given promptly to the A/E (or in-house design office) for review and approval. Drawings shall be reviewed for compliance with the contract documents. Fire protection systems shall be approved by a qualified fire protection engineer. Structural systems shall be approved by a registered structural engineer. Results of the review should be provided to the Contracting Officer within 2 weeks after receipt of the shop drawings by the A/E (or in-house design office).

g) The procedures between NAVFACENGCOM and the contractor shall be as required in the contract documents; procedures for CQC are included in NFGS-01400. Procedures within NAVFACENGCOM shall be as described below:

6.2.1 Approval.

a) When the EFD/OICC is the approving office, a copy of each approved drawing is retained by the EFD/OICC. A duplicate may be sent to the activity concerned.

b) When the local activity is the approving office, the activity retains a copy of each approved drawing and transmits a duplicate to the OICC or EFD.

c) When all drawings for a given contract have been approved, they are assembled in a set and bound in a folder or folders. One NAVFAC drawing number is assigned to each folder; if more than one folder is used for a given contract, a separate number shall be assigned to each folder.

6.2.2 Shop Drawing Stamp.

a) Arrangement. Stamps shall be arranged as follows:

Department of the Navy
Naval Facilities Engineering Command
(Insert approval category)
Contract No. _____ Spec. No. _____
for _____
Checked _____ Date _____
(Insert authorized representative (as EFD, OICC) for Commander, NAVFAC.)

b) Approval Categories. Four types of stamps shall be used. The approval category for each type shall read as follows:

(1) APPROVED Subject to the Requirements of

(2) APPROVED for General Arrangement and Sizes and Materials Only

(3) APPROVED Subject to Corrections Noted and Requirements of

(For use where corrections are minor. Resubmittal is not required. Corrected copy is returned to the contractor for compliance.)

(4) RESUBMITTAL REQUIRED. Returned for Corrections Noted

(For use where corrections are so extensive as to warrant rejection. Reasons for rejection must be clearly indicated.)

Section 7: CONTRACT CHANGES

7.1 Scope. The general information listed here is applicable to all contract drawings and all sections of the contract specifications.

7.1.1 Types of Changes. Those before contract award are amendments and those after contract award are modifications. Amendment numbers are prefixed by three ciphers; example: Amendment No. 0001. Modification numbers begin with a "P" followed by five digits. Numbers are assigned in numerical order as required. For example, the third modification will be: P 00003.

7.1.2 Change Numbers. All change numbers are assigned by the Contract Division of the EFD. Changes prepared by A/E firms will provide a blank space for insertion of the number by the EFD. The EFD contract division will also prepare a cover sheet (Standard Form 30) for all changes; therefore, the first page of the change's text will be page number "2." Changes will be typed on bond paper and submitted with bond original and one copy.

7.1.3 Cost Estimate. Changes shall be accompanied by detailed cost estimates to indicate all changes in the construction cost of the project or to substantiate a statement of no change in cost. Cost information shall be given in unit costs, not as lump sum items, where appropriate. Proposed modifications shall be accompanied by a detailed cost estimate that can be used in the negotiation of change orders.

7.2 Change Format. Changes should follow the same order as the contract specifications with each change item referencing the appropriate section and paragraph by number and title. Some typical examples follow.

7.2.1 Adding a Specification Section.

In the "CONTENTS" under "DIVISION 9. FINISHES", add:

"09310 Tile Work."

This section is attached to this amendment.

NOTE: The section to be added is prepared as a separate section in the normal manner, with the exception that the amendment number appears opposite the specification number at the bottom of each page.

7.2.2 Changing the Contract Drawings.

7.2.2.1 Adding Drawings.

EXAMPLE: SECTION 01011 ADDITIONAL GENERAL PARAGRAPHS

1.2.1 Contract Drawings, Maps, and Specifications (APR 84): Add the following drawings to the list of drawings, making a total of 16 drawings:

DWG NO	TITLE
"5060012	Revised Floor Plan - Area A."
"5060013	Lighting Fixture Details."

NOTE: Sheet numbers of the above added drawings are entered as 15 of 16 and 16 of 16. NAVFAC drawing numbers are issued by the EFD. Also, see NOTE in Paragraph 7.2.2.2, Revising Drawings.

7.2.2.2 Revising Drawings.

EXAMPLE: SECTION 01011 ADDITIONAL GENERAL PARAGRAPHS

1.2.1 Contract Drawings, Maps, and Specifications (APR 84): The following drawings bearing revision dates supercede previously issued drawings bearing the same number and title.

DWG NO	TITLE
5060002	Foundation Plan, Revised [Date]
5060003	Floor Plan, Revised [Date]

NOTE: Complete "REVISIONS" block in upper right corner of drawings with letter designation, description, by whom prepared, and date. "Approved" block is completed by the engineer-in-charge (EIC) at the EFD. Note revisions by distinctive symbols at the appropriate locations on the drawings. Prior to initiating new drawings or revised drawings, coordinate with the EIC at the EFD to ensure that adequate time is available prior to bid opening.

7.2.2.3 Written Changes to Drawings.

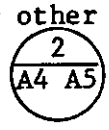
EXAMPLE: SECTION 01011 ADDITIONAL GENERAL PARAGRAPHS

1.2.1 Contract Drawings, Maps, and Specifications (APR 84): Changes shall be made to the prints of the drawings as follows (drawings will not be revised and new prints will not be issued at this time):

DWG NO	CHANGE	TITLE/DESCRIPTION OF CHANGE
506005		PLAN AND DETAILS

1. On 2/A-4/A-5, "Enlarged Plan:" in Room 301, delete "FDV Cabinet"; in Room 302, note north wall along column line 2 as "6-inch CMU."

2. On 3/A-4/A-5, "Enlarged Partial Floor Plan:" relocate door 106 approximately 6 inches west and adjacent to D.F.

NOTE: Assign one change number for each separate plan, section, or other detail amended. Note that the circular symbol shown on drawings as  is typed 2/A-4/A-5.

7.2.2.4 Sketch Sheets. When written changes to the drawings are not feasible, letter-size sketches may be issued by amendment. Details and other information shown on the sketch sheet shall be coordinated with the drawings. The title block shall contain the same information as the title block on project drawings.

EXAMPLE: SECTION 01011 ADDITIONAL GENERAL PARAGRAPHS

1.2.1 Contract Drawings, Maps, and Specifications (APR 84): Changes shall be made to the prints of the drawings as follows (drawings will not be revised and new prints will not be issued at this time):

DWG NO	CHANGE	TITLE/DESCRIPTION OF CHANGE
5060001		SITE PLANS AND DETAILS
	1.	Add details "Revisions to Utility Site Plan" and "Detail of Intercepter Catch Basin" as shown on Sketch A, accompanying this amendment.

7.2.3 Changing the Contract Specifications.

7.2.3.1 Adding Paragraphs or Subparagraphs.

EXAMPLE: SECTION 03300 CAST IN PLACE CONCRETE

3. SUBMITTALS: Add the following subparagraph.

3.2 Contractor-Furnished Mix Design: A concrete mix design for each type of concrete included in the work shall be submitted to the Contracting Officer for approval.

7.2.3.2 Word Changes.

EXAMPLE: SECTION 15514 FIRE PROTECTION SYSTEMS

1. SCOPE: In line 4, delete "manually actuated" and substitute "automatic."

7.2.3.3 Omitting Paragraphs or Subparagraphs.

EXAMPLE: SECTION 02612 BITUMINOUS PAVING AND BASE COURSE

4.2 Sand-shell Base Course: Delete this paragraph complete with its subparagraphs and substitute:

4.2 OMITTED

7.3 Contract Amendment. Contract amendments are issued by an EFD. Note the following:

a) The cover page, Standard Form 30, is prepared by the EFD.

b) The Solicitation Number and page number appear in the upper right-hand corner of the page. Solicitation is the same as the construction number except that the "C" is replaced by a "B."

c) The specification number and the amendment number appear at the bottom center of the page.

Section 8: RETENTION OF DATA

8.1 Survey Data and Design Computations. Design for public works is based on survey notes, subsurface investigation data, manual computations, digital and analog computer computations, pile-driving records, pertinent diagrams and sketches, and similar data. All must be recorded and preserved for use with future requirements.

8.1.1 Survey Notes. Field survey notes may be recorded in standard bound hard-backed survey books or looseleaf books, appropriately lettered to indicate items such as project title, location, and contract number (if project was contracted). Survey notes taken by an A/E should be turned in with the 35-percent design submission. Survey notes shall be retained by the EFDs for a period of not less than 10 years.

8.1.2 Subsurface Investigation Data. Subsurface investigation data, prepared in accordance with commercial practices, shall be suitably bound with cardboard binders or other material sufficiently heavy to provide adequate protection for the contents. Normally, a separate binder shall be used for each project. Binder covers shall be appropriately identified and the data retained by the EFDs.

8.1.3 Computations. All design computations, diagrams, and sketches shall be set down either in books or looseleaf binders. These books or binders shall be identified by the project title, location, contract number, and serial number. If computation books contain computations for more than one project, an up-to-date index shall be provided at the front of each book. Computation books by A/E contractors shall contain computations only for the given contract.

8.1.3.1 Books. When specially provided books are required or selected, the using activity shall assign a serial number to every computation book used.

8.1.3.2 Looseleaf Binders. When looseleaf binders are selected, the binders shall contain information as specified above. Normally, a separate binder shall be used for each project. Binder covers shall also be appropriately identified as specified above. Sheets shall be of good quality, preferably cross-section paper with a 10-by-10 grid, punched for binding, each 8-1/2 by 11 inches in size.

8.1.3.3 Retention. Completed books and binders may be retained in hard-copy or filmed to reduce storage space and filed and retained permanently by NAVFACENGCOM and EFDs. Once filmed, the hard-copy shall be destroyed.

8.1.4 Computer Computations. Digital computers may be used without advance approval; however, the use of an analog computer requires advance approval by NAVFACENGCOM. Where computations are made with the aid of digital computers, the following shall be furnished along with other information determined to be necessary by the Contracting Officer:

a) All pertinent input data.

b) All pertinent output results.

c) Summary and definitions of all input and output terminology.

d) Documentation of the program used, including a written summary of program intent, engineering methods, assumptions, limitations, formulas, and numerical methods used.

e) Description of the method used to verify and check results.

f) If the computer program was created or obtained for the purpose of solving a problem as part of this contract, then the contractor shall provide a listing of the program in the language used in its development.

(1) Input data, output, summaries, outlines, and documentation shall be clearly marked, sequenced, and identified with program title, computer, date, responsible person, contract title, contract number, and structural part. In cases where the furnished information is not in standard computer form, submission shall be in accordance with the paragraph Computations.

(2) Retention of the furnished information shall be in accordance with Paragraph 8.1.3, Computations, with computer data retained in suitable environmental condition.

8.1.5 Pile Driving Records. Prepare pile driving records on NAVFAC Form 4-11013/11 and retain records permanently in EFD files.

8.2 Contract Files.

8.2.1 Prior to Contract Award. For all contracts, one set of film negatives (105-millimeter or 35-millimeter aperture cards) shall be placed in the contract records file, unless the activity (EFD or OIC) maintains a file of reproducibles of all drawings in the plan files. In such instances, it will not be necessary to file film negatives in the contract record files.

8.2.2 Contract Change Orders. A change order is a means of ordering variations, changes, and additions to the work under contract. The film or the reproducible drawings in the contract record or plan files provide a permanent record of the drawings prior to the contract change order. A film negative or reproducible of all revised drawings shall be placed in the contract record or plan files for each change order issued.

8.2.3 Shop Drawings. Upon completion of the contract, one set of shop drawings is retained by the EFD, and one set is furnished to the Commanding Officer of the activity concerned. For fire protection systems, three sets of shop drawings should be sent to the activity (PW, PW Maint., and Fire Department). The EFD can film shop drawings to reduce filing space. Once filmed, the film shall be filed and retained as above. Once filmed, the originals shall be destroyed.

8.3 Transmittal of Original Drawings. All original drawings shall be sent by registered mail. The transmitting office shall temporarily retain transparencies or photographic reproducibles of the original drawings until receipt of the originals has been confirmed.

8.4 Drawing Files. Most engineering field divisions maintain a film system for record drawings. A historical file of important permanent facilities is maintained at the Construction Battalion Center, Port Hueneme, CA, for disaster purposes only. Only standard and definitive drawings are filed at NAVFACENGCOM.

8.5 Film System. Field activities may use either the 35-millimeter film aperture card system or the 105-millimeter film system for construction, shop, advanced base, and record drawing purposes. All microfilm shall conform to MIL-STD-399, Microfilm Formats. Format 3 shall be used for 35-millimeter film aperture cards, and Format 8 shall be used for 105-millimeter film. When the 35-millimeter film is used, aperture cards shall be identified similar to Figure 11 or punched, if desired, in accordance with MIL-STD-804, Formats and Coding of Aperture, Copy and Tabulating Cards for Engineering Data Micro-Reproduction System. All films shall be made from original drawings whenever possible. Filmed reproductions shall conform to the requirements of:

a) MIL-P-9879, Photographing of Construction/Architectural Drawings, Maps, and Related Documents, 105 mm Requirements for;

b) MIL-M-9868, Microfilming of Engineering Documents, 35 mm Requirements for;

c) MIL-C-9877, Cards, Aperture;

d) MIL-M-38761, Microfilming and Photographing of Engineering/Technical Data and Related Documents: PCAM Card Preparation, Engineering Data Micro-Reproduction System, General Requirements for, Preparation of; and

e) MIL-HDBK-303, Micro-Reproduction of Engineering Documents.

8.5.1 Film Envelope Data. Each 105-millimeter negative shall be enclosed in an envelope not to exceed 5 in. x 8 in. with the opening on the right. Pertinent information to identify the drawing shall be entered on the envelope (see Figure 11). Minimum information required is: NAVFAC drawing number, title of drawing, date of drawing, EFD, contract number, and security classification, if any.

105mm FILM ENVELOPE

EFD/ACTIVITY/LOCATION | NAVFAC DRAWING NO.

CONTRACT NUMBER | shop dwg. _____ bid dwg. _____ record | SHEET ____of ____ | DATE OF DRAWING

TITLE OF DRAWING

DRAWING DESCRIPTION, BUILDING NUMBER, CATEGORY CODE, OTHER (as applicable)

CONTRACTOR NAME AND ADDRESS

SECURITY CLASSIFICATION

NOTE: OVERALL ENVELOPE NOT TO EXCEED 5 in. X 8 in. WITH OPENING ON THE RIGHT.

Figure 11
Film Envelope

8.5.2 Aperture or Copy Card Data. The filming contractor should:

a) Preserve and package aperture or copy cards containing 35-millimeter negative in accordance with commercial practice and in a manner that affords protection against corrosion, deterioration, and physical damage during direct shipment to the receiving activity.

b) Furnish aperture or copy cards as required by MIL-STD-399 and identify the cards in accordance with MIL-STD-804 or indicate the sheet number, the total number of sheets in the set of drawings, and the NAVFAC drawing number.

c) Upon receipt of the aperture or copy cards, the balance of the required information similar to Figure 11 shall be placed on the cards by the originating office prior to distribution.

8.5.3 Filing. A responsible custodian of files should be designated to keep a proper record of the receipt, issue, loan, and return of all drawings and films in custody.

8.5.4 Security Measures. Security shall be exercised in accordance with:

a) Department of the Navy Security Manual for Classified Information, OPNAV Instruction 5510.1.

b) Armed Forces Industrial Security Regulations, DOD 5220R.

c) Industrial Security Manual for Safeguarding Classified Information, DOD 5220.22M.

8.6 Disposal of Drawings. Custody of drawings shall be as stipulated in Table 1. Eventual disposition of drawings shall be as provided in Disposal of Navy and Marine Corps Records, SECNAV Instruction P-5212.5.

8.6.1 Record. The EFD and OICC shall maintain accurate records of all original drawings transferred to a Federal Records Center (FRC), PWC, or Public Works Department (PWD). The maintenance of these records can be delegated to a PWC or PWD by the EFD.

8.6.2 Drawings for Demolished Structures and Disestablished Naval Activities. Provide disposal in accordance with SECNAVINST P-5212.5. The exception is that, when a disestablished activity is transferred to an agency or party beyond naval authority, the pertinent drawings shall be forwarded to such agency or party. NAVFACENGCOM must be advised of such transfers.

APPENDIX A

EXAMPLE OF 35-PERCENT FACILITY DESIGN REQUIREMENTS

1. The Design Submission shall include, as minimum, the following:

   a) 35-percent-complete project drawings,

   b) An outline project specification,

   c) A preliminary cost estimate,

   d) Back-up data as required by this appendix.

2. The Drawings shall contain, as a minimum, the following information:

   a) Site Plans showing existing and new site features including buildings, pavements, and utilities; survey controls; grading and storm drainage; soils information; and groundwater elevations.

   b) Architectural Floor Plans showing complete functional layout, room designations, pertinent features and dimensions, all columns, and all builtin equipment, and provisions for accessibility for the handicapped.

   c) Elevations showing all openings, type and extent of building finishes, and finish grade at building.

   d) Building Sections indicating relationship of various levels, floor to floor heights, construction systems, and materials.

   e) Preliminary Finish Schedule indicating proposed finishes.

   f) Tabulation of All Net Areas for spaces limited by criteria or program.

   g) Tabulation of Gross Building Area by floors and total building. Delineate areas computed with small-scale, single-line dimensioned drawings.

   h) Justification for deviation from areas or requirements contained in criteria or program, or deviation from approved concept drawings.

   i) Preliminary Furniture Layouts showing that adequate wall space, circulation area, etc., are being provided to accommodate the intended use of the space as follows:

      (1) Spaces requiring specific accommodations (example: 200-seat assembly room).

(2) Typical Bachelor Enlisted Quarters (BEQ) bedroom, showing location of wardrobes, and providing optional single-and double-bunking plans.

(3) Major spaces with multi-purpose use requirements that will require significantly different furniture arrangements for different uses.

(4) Where the building design dictates special design furniture, schematic details sufficient to define the nature and extent of the special items should be included. This applies whether special design furniture items will be included in plans specifications or procured as collateral equipment.

(5) Repetitive spaces that form a major component of the design. (Show typical layout for BEQ bedrooms, school classrooms, etc.)

j) Interior Mechanical and Electrical data showing central heating/cooling plant and electrical distribution details, including:

(1) Energy analysis;

(2) Design criteria;

(3) Heating/cooling source;

(4) Design analysis and energy studies;

(5) Location of major equipment (for plumbing, show fixture locations, and basic riser diagrams);

(6) System diagrams, including all ventilation systems;

(7) Control diagram for mechanical systems;

(8) Line diagram for electrical systems.

k) Exterior Mechanical and Electrical Documentation and data showing central heating/cooling plant and electrical distribution details to include:

(1) Plant loads;

(2) Plant capacity;

(3) Plant floor plan and general arrangement;

(4) System diagram;

(5) Fuel storage general arrangement;

(6) Route of existing exterior heat, power, commmunications, and fire-alarm systems, including capacities;

(7) Routing and capacities of new systems.

1) Civil and Structural Details and data showing:

(1) Boring plans and logs;

(2) Type of foundation system planned. Allowable soil bearing if spread footings are to be used;

(3) Design loads (live load, wind, seismic, etc.);

(4) Explosive safety (identify threat and give distance or negative statement);

(5) Type of structural system and kind of materials to be used;

(6) Fallout shelter statement.

3. The Outline Specification shall show what items of work will be included in the project specification. The specification shall be arranged in the 16-division format of the Construction Specification Institute (CSI) sequentially by section number. Include in this submittal the number, title, and date of the guide specification being used to prepare each project specification section covered by a NAVFAC guide specification. List the major materials or systems selected for each section, whether or not based on a guide specification. List all 16 divisions. Where there is no work required in a particular division, include a statement "No Work in This Division" under the division heading.

4. The Project Design Cost Estimates are required with the drawings and specifications and should reflect current costs as estimated from the drawings, design computations, basis for design, and specifications. For those elements of the project where status of design does not permit a firm or reasonably accurate take-off of the quantities or firm pricing of individual items of work, lump-sum costs based on available data may be included. The basis of these costs such as cost per square foot of building, per square yard of pavement, or per mechanical or electrical fixture shall be given. Lump sum costs shall be kept to a minimum.

5. Economic Analysis. The submissions must substantiate by economic analysis (life cycle cost) all alternatives examined and include brief statements of the rationale for the various selections.

6. Energy Conservation aspects of design resulting from investigation of the complete energy system must be discussed. Brief statements shall be included that all cost-effective systems/features are incorporated, such as heat recovery, sun-shades, control devices, etc.

APPENDIX B

EXAMPLE OF BASIS OF DESIGN REPORT

The following is an example of format and content for the "BASIS OF DESIGN REPORT." Ensure that this report is coordinated with the 35-percent outline specification.

I ARCHITECTURAL

A. DESIGN AREA TABULATION

The project gross area shall not exceed that stipulated by the scope of work without prior approval. The A/E shall provide in the basis of design a complete area breakdown tabulation for gross and net areas to conform to scope and statutory criteria compliance. A supplemental drawing indicating method of area take-off shall accompany the area tabulation. Subsequent revised area tabulation submittals at the 100-percent and final stages of project development will be required.

B. MATERIALS

Provide description of materials for all major items of construction and of all interior and exterior finishes. The description of finishes may be accomplished by the use of preliminary finish schedule. Allowable finishes are normally selected from DOD 4270.1-M, DM-1 Series, or the DM pertaining to the specific type of facility.

II STRUCTURAL

A. FLOOR SYSTEM

Provide description of the structural floor systems proposed, with length and spacing of principal members (for beam and girder, etc.) if other than standard drawings are proposed.

B. ROOF SYSTEM

The structural roof system proposed with principal dimensions (column spacing, beam spacing, etc.) if other than standard drawings are proposed.

C. FOUNDATION SYSTEM

Discuss the pile system or foundation system proposed, with a brief discussion of each system evaluated.

III MECHANICAL

A. HEATING

Include a statement of indoor and outdoor design temperatures and "U" factors for walls, ceilings, floors, etc., to be used in the design.

Describe the heating system, including the heating medium and type of system and controls. Indicate the location of the heating plant. Provide a brief explanation of the basis of selection of fuel; this should include an economic comparison with other fuels.

B. PLUMBING

Determine the number of each type of fixture and estimate cost demand. Select the type of materials proposed for water pipe, stacks, etc.

C. AIR CONDITIONING, EVAPORATIVE COOLING, AND VENTILATION

The A/E shall give full consideration to all applicable design policies described in DOD 4270.1-M. In many instances, an economic analysis is required before certain selections can be made. The A/E shall provide these analyses, taking into consideration the equipment's initial costs, operating costs, and maintenance costs over the period of useful life. A report, complete with necessary backup data and calculations, shall be furnished with the basis of design at the time of the 35-percent submission.

State the type of system, the number of air changes per hour in various areas, and the ventilation air quantities during the heating season and how acquired.

Provide a brief description of the air-conditioning system proposed, such as whether factory-assembled or built-up system, number of zones, if applicable, or unit type, chilled-water system, or direct expansion, type of refrigerant, etc.

Specify areas to be air conditioned and whether air conditioning is authorized in accordance with DOD 4270.1-M.

Indicate inside temperature and relative humidities if applicable, outside wet and dry bulb design temperatures, "U" factors for the type of construction proposed, and a statement of the economics of applying insulation and/or sun-shades.

Describe equipment to be used, such as reciprocating or centrifugal compressor, condensers, air-handling equipment, duct system, piping, etc. Provide a brief description of controls and the sequence of operation.

D. VENTILATION

State whether a gravity or mechanical system is to be used and provide a brief description of the type proposed. State the number of outside air changes per hour in various areas and the type of filtration if applicable. Describe smoke removal systems employed. Describe the operation of the system in summer and winter use.

E. REFRIGERATION (COLD STORAGE)

Provide a statement of areas to be refrigerated, indicating their usage and temperatures to be maintained. Indicate outside design dry and wet bulb temperatures, type of refrigeration equipment, and type and thickness of refrigeration insulation.

F. FUEL DISTRIBUTION AND STORAGE

For gas distribution, provide a statement of type and location of take-off from supply and available pressure, and describe type and materials for pipes and valves.

Provide a statement of unloading facilities such as dock, tank car, or truck. Describe type of system and proposed features for liquid petroleum systems. Indicate basis for storage capacity, rate of pumping and number of dispensing outlets. Describe power supply and power requirements. Select type and materials for pipe, tank, and valves. Describe LPG system and materials where applicable.

G. COMBINATION SYSTEMS

For systems in which the heating, ventilating, and/or air conditioning are combined, repetition may be eliminated by consolidating the aforementioned requested information.

H. ENERGY CONSERVATION

Discuss energy-conserving features considered in the initial design development. Provide a brief description of the system selected.

I. MISCELLANEOUS MECHANICAL SYSTEMS

Provide description of any special mechanical systems such as compressed air, hydraulic, nitrogen, etc., and explain the source of the medium.

J. HEATING PLANTS AND HEATING PLANT ADDITIONS

1. Statement of type of fuel to be used and an economic comparison of the selected fuel with other available fuels.

2. A brief description of new boilers, including size, pressure, and type.

3. A description of any new auxiliaries to be added and what source of power will be used for their operation.

4. Description of the safety and combustion control systems utilized and how they will perform.

IV ELECTRICAL

A. INTERIOR DISTRIBUTION SYSTEMS

1. Electrical characteristics of circuits (phase, voltage and number of wires).

2. Breakdown of the estimated connected load to show:

   a. Lighting and convenience outlet load;
   b. Power load for building equipment, such as heating, air-conditioning, etc.;
   c. Loads for special operating equipment, such as compressors, generators, and pumps, and for power receptacles being provided to energize special equipment. Apply an appropriate demand factor to each computed total demand load.

3. Type of wiring system, such as rigid conduit, electrical nonmetallic tubing, nonmetallic sheathed cable, etc., and location of proposed use.

4. Type of conductors, such as rubber-insulated, thermoplastic-insulated, polyvinyl chloride jacket, etc., and location of proposed use.

5. A statement describing proposed pertinent standards of design, such as voltage drop, lighting intensities, and type of lighting fixtures.

6. A determination (include calculations) of short-circuit duty required for all protective devices and switchgear.

7. Motor control and type (i.e., across-the-line, reduced voltage, etc.) and rationale for selecting them.

8. Type and arrangement of telephone, signal intercom, fire alarm systems, and security systems.

9. Statement relative to the adequacy of the outside distribution system to accept the new loadings imposed at the point of take-off. If the source is inadequate, state measures necessary to correct the deficiency.

B. EXTERIOR DISTRIBUTION SYSTEMS

1. Statement relative to the adequacy of the primary supply at the point of take-off. If primary source is inadequate, state measures proposed to correct the deficiency.

2. Electrical characteristics of power supply to station, or portion involved, including circuit-interrupting requirements and voltage regulation.

3. Estimate of total connected load and resulting kilowatt demand load by applying proper demand and diversity factors, if a group of loads is involved.

4. Basis for selection of primary and/or secondary distribution voltage.

5. Type of conductors, such as copper or aluminum, location of proposed use.

6. A statement describing pertinent standards of design, such as voltage drop, physical characteristics of overhead or underground circuits, type of lighting units, and lighting intensities.

7. Type and adequacy of telephone, signal, and fire-alarm systems, including a statement as to number of spare telephone conductors available and spare capacity on fire-alarm circuit.

V CIVIL

A. WATER SUPPLY

1. Explanation of existing system, including the type, capacity, condition, present water use, and unsatisfactory elements of component part (for major extensions).

2. Statement of type of construction proposed, materials for water mains, type of well, etc.

3. For distribution systems, statement of design, domestic and fire flow, residual pressure, and elevation differentials (should include designer's basic estimate of tentative pipe sizes).

4. Statement of tentative sizes, elevation, capacities, etc., as can readily be determined without long computations or design, consideration for reservoirs, treatment units, pumping plants, well pumps, and such units.

B. SEWERS AND SEWAGE DISPOSAL SYSTEMS

1. Explanation of existing system, including the type, capacity, condition, present flow, and unsatisfactory elements of component parts for major extensions.

2. Interpretation of degree of treatment necessary by effluent requirement and units necessary for treatment.

3. Statement of design factors, with present and projected design population loads for sewage treatment plants.

4. Statement of materials to be used for sewer systems and sewage treatment plants.

C. ROADS, DRIVEWAYS, PARKING AREAS, AND WALKS

1. A statement of general soil conditions, with brief outline of soil exploration and testing performed.

2. The type and volume of traffic, controlling wheel loads and types of classes of roads under consideration, with justification for any deviation from criteria thickness for those classes.

D. AIRFIELD PAVEMENT

1. The relative economics of rigid and flexible paving are constantly changing with the improvement of design features and construction techniques and with development of new products. These factors are of significant importance in both new pavement construction and in the rehabilitation of existing pavement. All projects require careful study and evaluation of the in-place materials and the proposed construction materials. For the purposes stated, the Naval Facilities Engineering Command wishes to review carefully the design cross-sections of all major airfield paving projects.

2. DOD 4270.1-M requires that alternate designs be prepared for both concrete and flexible pavement of all non-critical areas and that the contractor be given the option of providing either. There are no quantity limitations on this requirement.

3. A statement of general soil conditions, with a brief outline of the soil exploration and testing performed.

4. Wheel loading, type of aircraft, and any abnormal operating conditions.

5. Type of pavement (bituminous, concrete, reinforced, etc.).

6. Deviations from Design Manuals and/or Naval Air Systems Command planning standards, with justification.

7. Method of handling storm drainage.

8. General statement as to type of lighting to be provided and adequacy of existing runway and taxiway regulator capacities.

E. DUST AND EROSION CONTROL

Dust and erosion control, where deemed necessary, will be considered an integral part of all design and construction projects. Such controls will be generally limited to areas actually scarred or denuded in the process

of constructing a project. Dust and erosion control will not be confused with landscaping. The first submittal will contain the necessary design data, outline specifications, and cost for dust and erosion control measures, where applicable. The basis of design will include a statement regarding the type of treatment selected, affected areas, and reasons for selection of type, and determination of areas.

F. FENCING

Provide type, height, and justification for fencing.

G. CATHODIC PROTECTION

1. Results of soil resistivity measurements when a buried steam line, petroleum-oil-lubricant line (POL), or other line type is required.

2. Variations in soil make-up.

3. Soil moisture content and normal seasonal variations.

4. Results of structure-to-soil potential measurements where protection is to be provided for existing underground structures or where buried test specimens are used for new installation.

5. Results of temporary cathodic protection tests, if any.

H. ENVIRONMENTAL POLLUTION CONTROL

Provide a statement explaining expected environmental pollution and the proposed method of control. A detailed description will be necessary for those facilities directly related to controlling air and water pollution; such as sewage treatment plants, industrial treatment facilities, incinerators, smoke elimination facilities, and other similar projects.

I. SITE DEVELOPMENT

Describe the site of the project and its natural advantages and disadvantages relative to the proposed project. Additional statements should be made outlining the proposed landscaping and other site work necessary to complete the site development.

VI FIRE PROTECTION

A. Provide the following information:

1. Exit information, including number, type, exit travel distance, exit unit widths based on occupant load and capacity, etc.

2. Type and location of the fire-extinguishing and/or detection systems to be provided.

3. Description of the fire-alarm system to be provided.

4. Location and rating of fire-rated walls and partitions.

B. For facilities that are to be sprinklered, provide a description of the sprinkler system. Include the following information: hazard rating of the occupancy, type of system, design density to be specified, and analysis of the water supply, to determine that sprinkler demands can be met.

C. Describe the type of automatic sprinkler system(s): deluge, pre-action, wet or dry pipe system, water volume, and pressure required.

D. For systems hydraulically designed, provide results of flow tests made on the water main near the point of connection.

Appendix C
Specification Cover Sheet

Preceding Section 01011 in each project specification, include the specification cover sheet. Following Figure C-1, prepare a specification cover sheet for use as camera-ready master of the first page of the project specification. Substitute appropriate information where the sketch has blanks with identifying numbers. Do not include the identifying numbers or the words Figure C-1 Sample Specification Cover Sheet:, in the final manuscript. Fill in the following at the identifying numbers listed:

(1) Appropriate Engineering Field Division
(2) Military location of the division
(3) Specification number
(4) Construction contract number
(5) Type of appropriation, such as "MCON"
(6) Exact name of project
(7) Military location of the project through (8)
(9) EFD Specification Branch Head
(10) Architect- or Engineer-in-Charge (name or initials) and Code

DEPARTMENT OF THE NAVY

_____ DIVISION
(1)

NAVAL FACILITIES ENGINEERING COMMAND

_____
(2)

SPECIFICATION NO._____
(3)

CONTRACT NO.

_____
(4)

APPROPRIATION:

_____
(5)

(6)_____
at the

(7)_____

(8)_____

DESIGNED BY:

_____

_____

SPECIFICATION PREPARED BY:

Architectural: _____

Civil: _____

Structural: _____

Electrical _____

Mechanical: _____

Submitted by _____
(10)

DATE: _____

SPECIFICATION APPROVED BY: (9) _____ DATE: _____

Figure C-1
Sample Specification Cover Sheet

REFERENCES

American Society for Testing and Materials (ASTM), 916 Race Street, Philadelphia, PA 19103.

ASTM E380-82	Standard for Metric Practice
ASTM E621-79	Recommended Practice for the Use of Metric (SI) Units in Building Design and Construction

American National Standards Institute, Inc. (ANSI), 1430 Broadway, New York, NY 10018.

ANSI Y14.2M-1979	Line Conventions and Lettering, Engineering Drawing and Related Documentation Practices
ANSI Y14.5M-1982	Dimension and Tolerancing for Engineering Drawings

Department of Defense. Available from Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

DOD 4120.3-M	Defense Standardization and Specification Program, Policies, Procedures and Instructions Manual
DOD 4270.1-M	Construction Criteria Manual (also available as NAVFACINST 11012.146)
DODISS	Index of Specifications and Standards

Department of the Navy, Chief of Naval Operations, Washington, D.C. 20350.

OPNAVINST 5100.23	Navy Occupational Safety and Health Program Manual
OPNAVINST 5100.24	Navy System Safety Engineering and Management
OPNAVINST 5510.1	Department of the Navy Security Manual for Classifed Information

Federal Acquisition Regulation (FAR), Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Masterformat - Master List of Section Titles and Numbers, CSI-MP-2-1-83, Construction Specifications Institute, 601 Madison Street, Alexandria, VA 22314.

Military Standards and Handbooks, available from Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

DOD-STD-100	Engineering Drawing Practices
MIL-STD-12	Abbreviations
MIL-STD-399	Microfilm Formats
MIL-STD-804	Formats and Coding of Aperture, Copy and Tabulating Cards for Engineering Data Micro-Reproduction System
MIL-HDBK-303	Micro-Reproduction of Engineering Documents
MIL-C-9877	Cards, Aperture
MIL-D-5480	Data, Engineering and Technical, Reproduction Requirements for
MIL-M9868	Microfilming of Engineering Documents, 35 mm Requirements for
MIL-P-9879	Photographing of Construction/Architectural, Drawings, Maps and Related Documents, 105 mm Requirements for
MIL-M-38761	Microfilming and Photographing of Engineering/Technical Data and Related Documents: PCAM Card Preparation, Engineering Data Micro-Reproduction System, General Requirements for, Preparation of

Naval Facilities Engineering Command (NAVFACENGCOM) Publications (P) and Instructions (NAVFACINST), available from Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

P-34	Engineering and Design Criteria for Navy Facilities
P-68	Contracting Manual
P-72	Department of the Navy Facility Category Codes
P-80	Facility Planning Criteria for Navy and Marine Shore Installation
P-272	Definitive Designs for Naval Shore Facilities

NAVFACINST 11010.14	Project Engineering Documentation (PED) for Proposed Military Construction Projects
NAVFACINST 5100.11	Command Safety and Health Program
NAVFACINST 11010.32	Military Program Projects; Preparation of Supporting Documents for
NAVFACINST 11010.49	Limitations on Scope Change and Authorization Escalation of a Military Construction Project
NFSS-M21	Magazine, Earth Covered Circular Composite Arch

Naval Facilities Engineering Command Form. Copies can be obtained from the Naval Facilities Engineering Command Field Division that has cognizance over the specific project.

Form DD 1391	Military Construction Line Item Data

GLOSSARY

A/E Firm. A private contractor with architects and engineers qualified to prepare Navy documents.

Criteria. Criteria manuals, guide specifications, definitive designs, standard designs, and other related guidance published to promote quality facilities engineering, design, construction, and maintenance.

Engineer/Architect in Charge (EIC/AIC). The person from the Preparing Activity in charge of all work for development or revision of criteria. This person is presently or is developing into the NAVFAC expert for the criteria being developed or revised.

Facilities Technology. Requirements necessary to ensure that each discipline oriented component system within the facility is current with the state-of-the-art; e.g., HVAC, potable wastewater removal.

Functional Requirements. Requirements necessary to ensure that a particular facility continually meets the objective of the function for which it was constructed.

Government. Naval Facilities Engineering Command acting in the interest of the U.S. Navy/Department of Defense.

Life-Cycle. A definition of the time required for the function under analysis to continue operating; e.g., a 40-year building life.

Life-Cycle Cost. The determination, evaluation, and presentation of all costs incurred by and in a facility being engineered/designed. Includes costs of planning, designing, engineering, constructing, operating, and maintaining the facility. Maintenance includes costs of doing business in the facility--wages/salaries.

Scope of Work. A description of all services required of the preparer of engineering and design project drawings and specifications.

State-of-the-Art. The scientific and technical level attained at a given time.

CUSTODIAN
NAVY-YD

PREPARING ACTIVITY
NAVY-YD

PROJECT NO.
FACR-0183

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-HDBK-1006/1	POLICY AND PROCEDURES FOR PROJECT DRAWING AND SPECIFICATION PREPARATION

3a. NAME OF SUBMITTING ORGANIZATION

b. ADDRESS *(Street, City, State, ZIP Code)*

4. TYPE OF ORGANIZATION *(Mark one)*

- ☐ VENDOR
- ☐ USER
- ☐ MANUFACTURER
- ☐ EFD/PWO
- ☐ AE
- ☐ CONTRACTOR
- ☐ DICC/ROICC
- ☐ OTHER *(Specify)*: _____

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional	b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8. DATE OF SUBMISSION *(YYMMDD)*

(TO DETACH THIS FORM, CUT ALONG THIS LINE)

DD FORM 82 MAR 1426

PREVIOUS EDITION IS OBSOLETE.

NAVFAC Overprint