MIL-HDBK-1006/4
31 JULY 1987

MILITARY HANDBOOK

POLICY AND PROCEDURES FOR DEFINITIVE AND STANDARD DESIGN AND STANDARD SPECIFICATION PREPARATION

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ABSTRACT

This military handbook, MIL-HDBK-1006/4 provides specific instructions for the preparation of definitive and standard designs and standard specifications. The handbook includes criteria policy, statements of responsibility of the preparing activities and the preparer, procedures for the criteria coordination review, and general guidance on format and style.

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-1006/4 for NAVFACENGCOM definitive and standard design and standard specification 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 Commander, Naval Facilities Engineering Command, Code DS02, 200 Stovall Street, Alexandria, VA 22332-2300; phone commercial (202) 325-0450.

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.

CRITERIA POLICY AND PROCEDURES MANUALS

Document Number	Title	Preparing Activity
MIL-HDBK-1006/1	Policy and Procedures for Project Drawing and Specification Preparation	CHESDIV
DM-6.02	Guide Specifications Manuals	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 Design and Standard Specification Preparation	HDQTRS

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

POLICY AND PROCEDURES FOR DEFINITIVE AND STANDARD DESIGN AND STANDARD SPECIFICATION PREPARATION

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Section 1: INTRODUCTION

1.1 Scope. This military handbook, MIL-HDBK-1006/4, provides policy and detailed procedures for development and revision of definitive designs, standard designs, and standard specifications.

1.2 Purpose of Criteria. Criteria are developed to define facilities engineering and design technology, functional/operational requirements, and health and safety requirements 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; but evaluate the effectiveness of criteria Navy-wide to ensure quality and consistency.

This handbook has been developed to ensure consistency and clarity of criteria drawings and standard specifications that strive to set practical and economical standards for the design and construction of naval shore facilities.

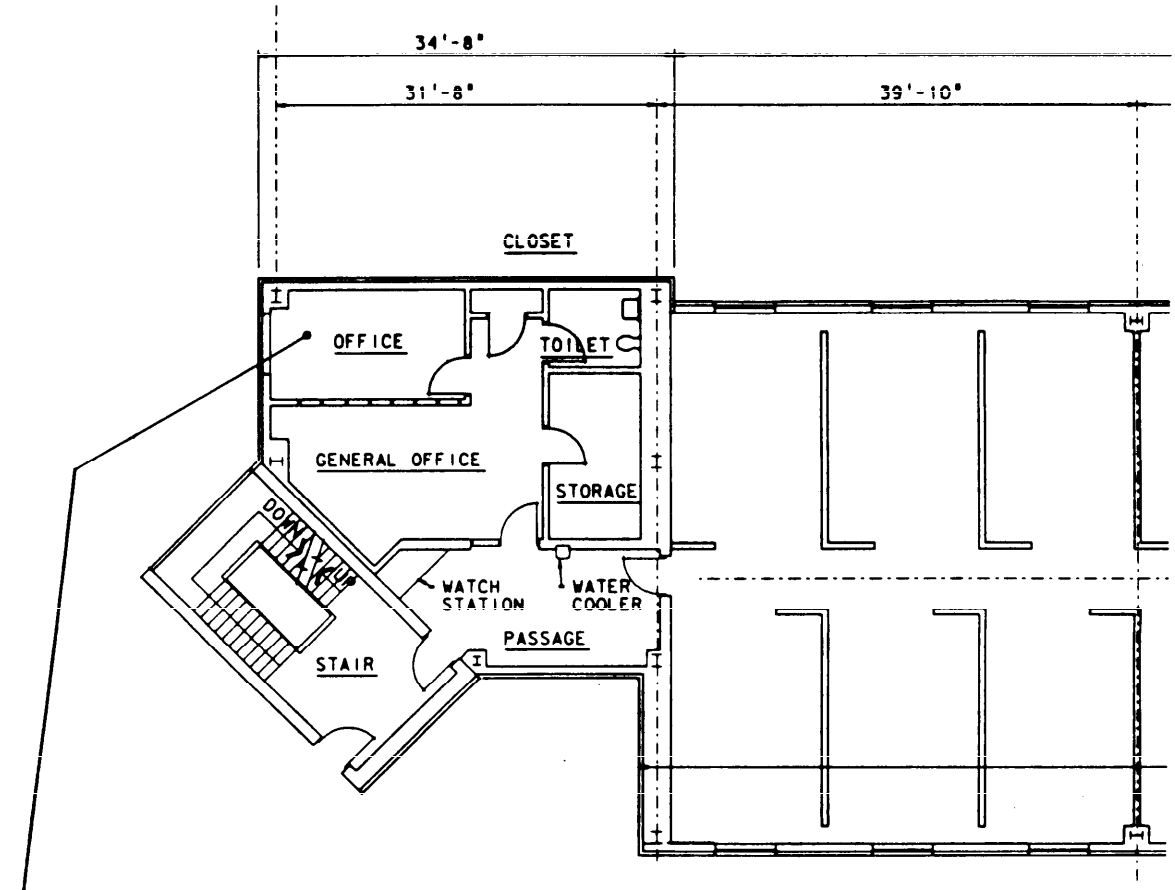
1.3 Cancellation. This handbook supersedes portions of NAVFAC DM-6, Drawings and Specifications, of February 1978 and Change 1 of March 1979.

1.4 Definitions.

1.4.1 Conceptual Definitive Designs. Definitive Designs for Naval Shore Facilities, P-272, Part I, are drawings of typical buildings and structures, classified by Category Codes 100 through 700, which reflect space criteria issued in DOD Manual 4270.1-M, DOD 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 description of Category Codes. These drawings provide floor plans, building sections and utility requirements for general guidance to architect/ engineer (A/E) contractors or in-house staff designers. These drawings are used with NAVFACENGCOM criteria manuals and guide specifications listed in P-34, Engineering and Design Criteria for Navy Facilities, to develop project drawings and specifications. Figures 1 and 2 are examples of conceptual definitive designs.

1.4.2 Prototype Definitive Designs. The drawings in P-272, Part Two, are advance designs where specific control is required to meet standardized function. 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 NAVFACENGCOM criteria manuals and guide specifications listed in P-34 to develop the project drawings and specifications.

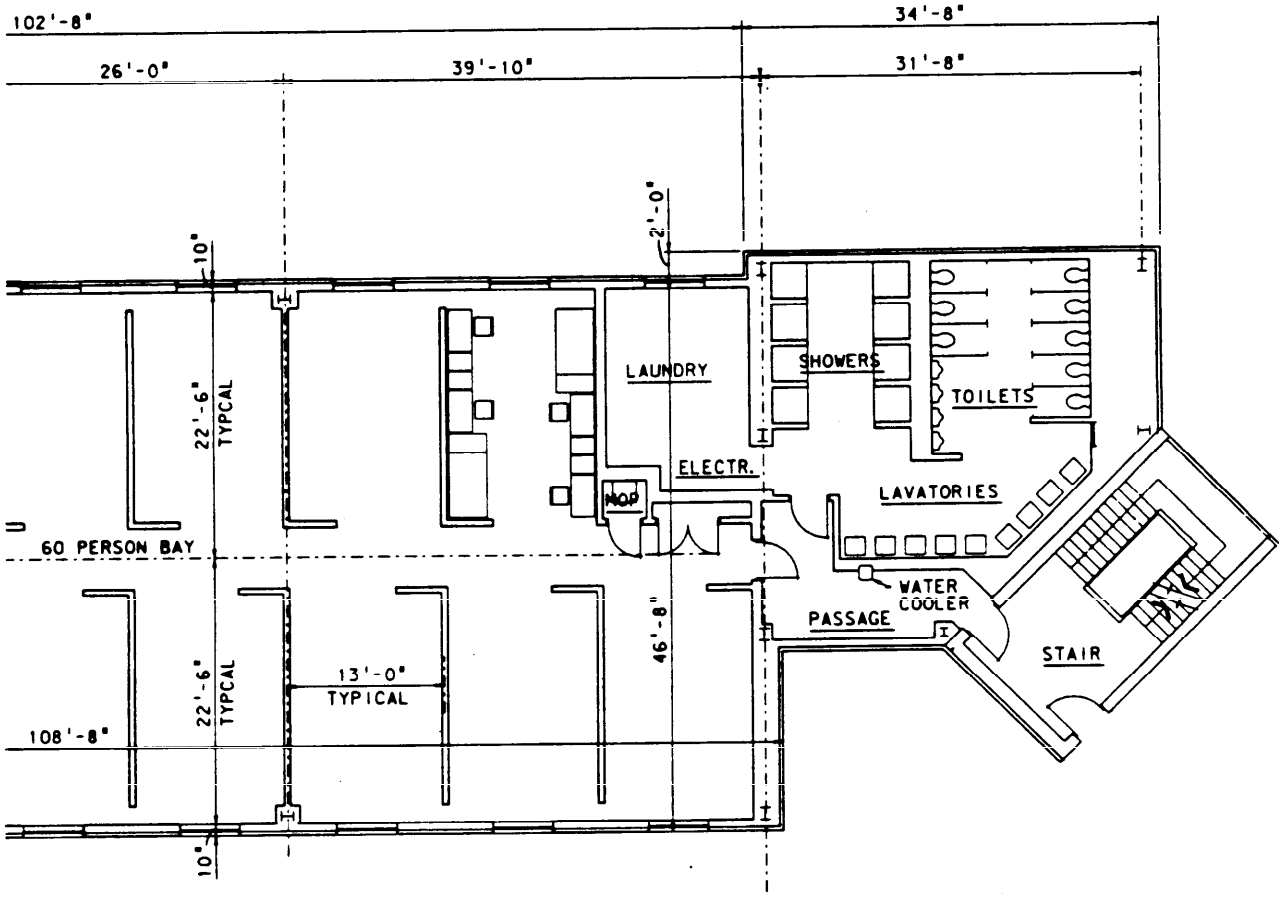
1.4.3 Standard Designs. These are detailed working drawings and specifications of Navy-unique facilities. These drawings and specifications form a part of the construction documents, requiring only supplemental



2nd Floor	COMPANY OFFICE
3rd Floor	COMPANY DAY ROOM
4th Floor	COMPANY TV/GAME ROOM

Above drawing not to scale.
Reference: DD-1404366

Figure 1
Sample Conceptual Definitive Design
(Photo-Reduced Print)



TYPICAL 60 PERSON SEMI-OPEN BAY PLAN
Scale: 1/8" = 1'-0"

Above drawing not to scale.
Reference: DD-1404366

Figure 1 (Continued)
Sample Conceptual Definitive Design
(Photo-Reduced Print)

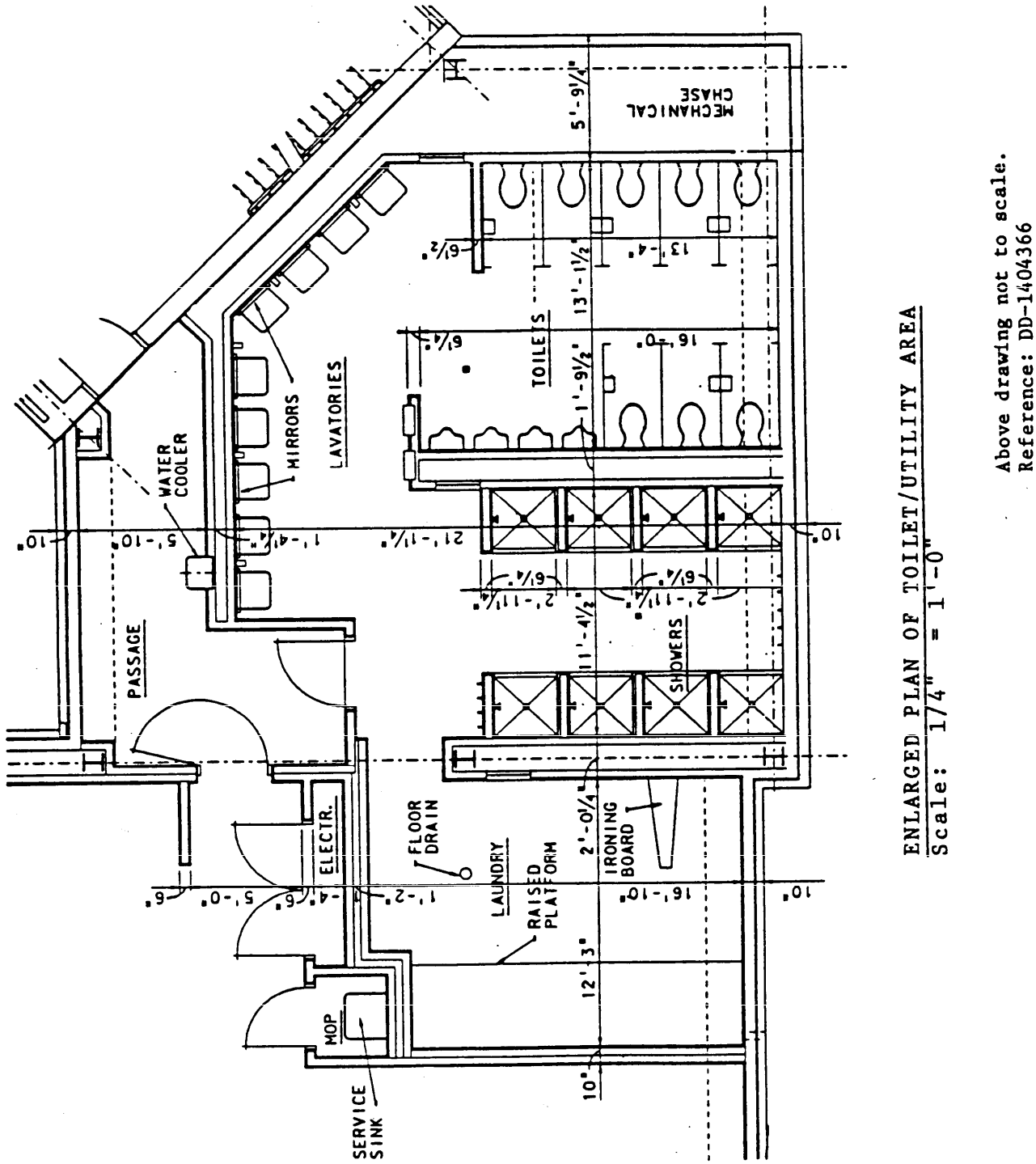
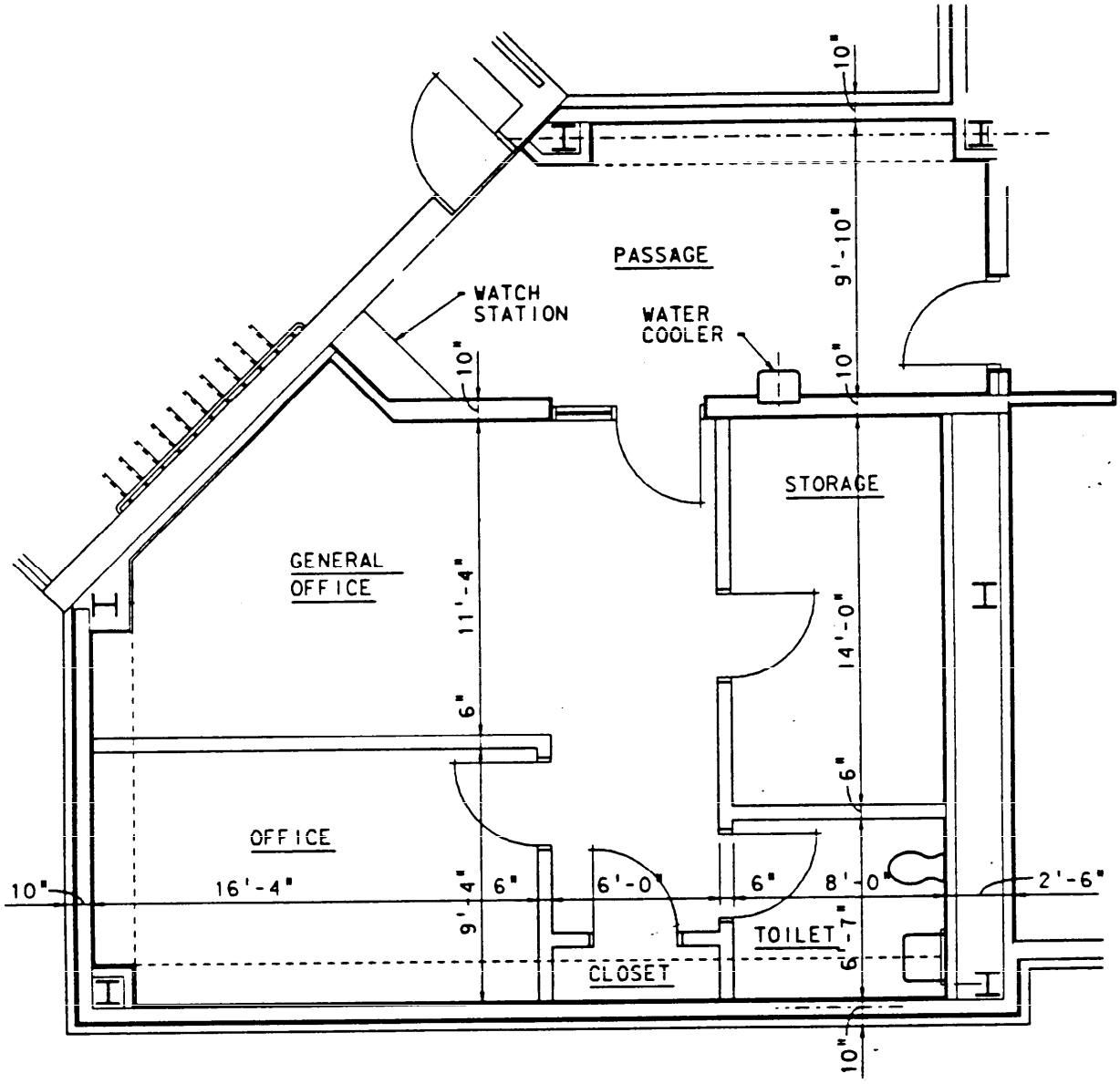


Figure 1 (Continued)
Sample Conceptual Definitive Design
(Photo-Reduced Print)



ENLARGED PLAN OF COMPANY OFFICE AREA
Scale: 1/4" = 1'-0"

Above drawing not to scale.
Reference: DD-1404366

Figure 1 (Continued)
Sample Conceptual Definitive Design
(Photo-Reduced Print)

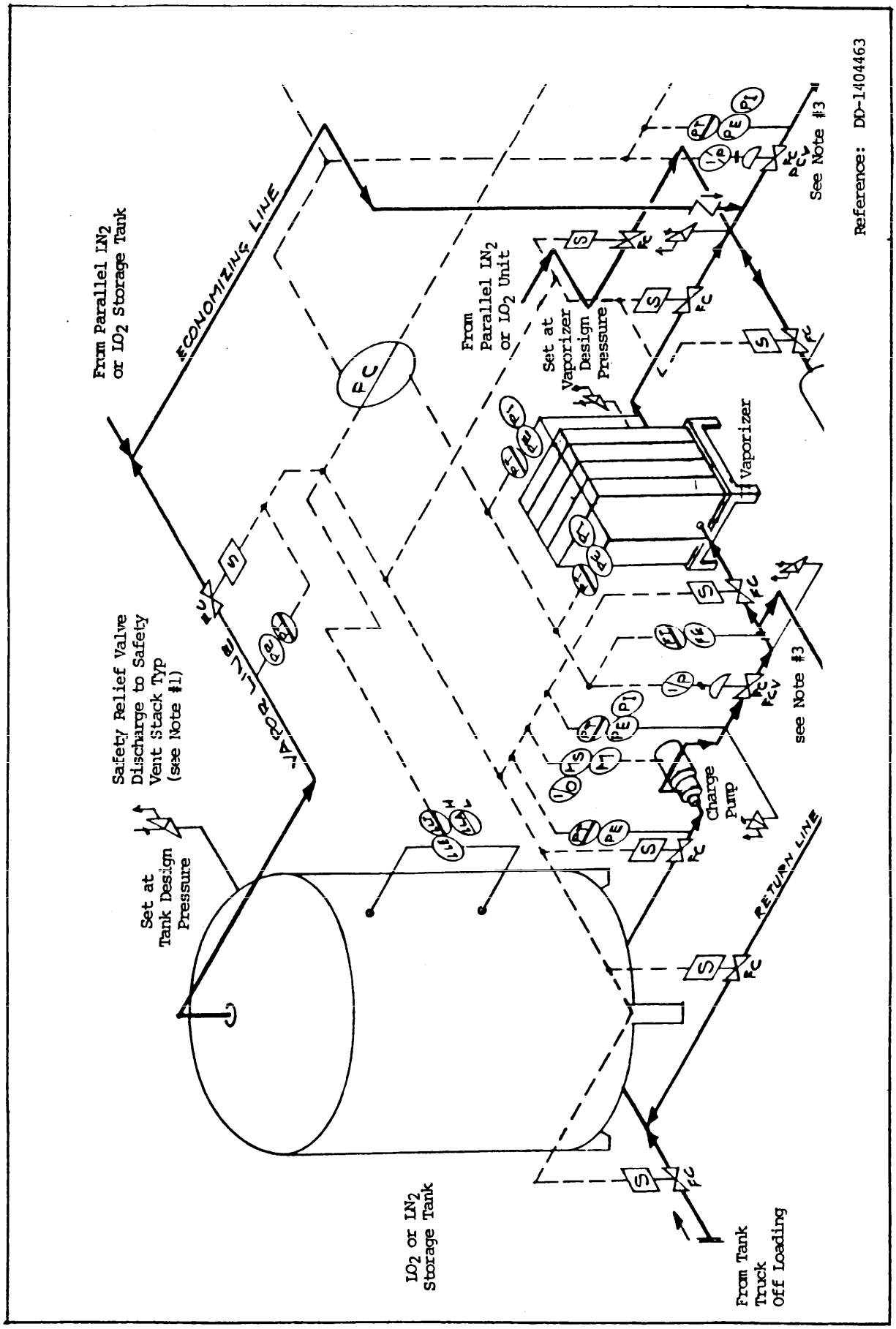


Figure 2
Sample Conceptual Definitive Design Using Isometric Single Line Diagram

drawings and specifications for adapting the facility to the specific site. Standard specifications are facility specifications that are incorporated verbatim in the project specifications and supplemented by sections covering project-unique features, such as sitework. See Earth Covered Circular Composite Arch Magazine, SD-1404375 through SD-1404389, for a sample standard drawing and Earth Covered Circular Composite Arch Magazine, NFSS-M21, for a sample standard specification.

1.4.4 Facility Plates. These are single-line schematics, bubble diagrams, or graphics based on definitive drawings (see Figure 3) included in the facility-type criteria 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, gases, etc.), (3) the location and size of doors and windows, (4) a reflected ceiling plan showing the location of lighting fixtures, diffusers, etc., and (5) room finishes and other technical design information about the room. See MIL-HDBK-1006/3 for the method of preparing facility plates.

1.5 Military Construction (MCON) Process. The planning process for shore facilities consists of the following steps:

a) Assignment of missions and tasks by the Office of the Chief of Naval Operations (OPNAV) to each activity of the Shore Establishment.

b) Determination of base loading. The Shore Facilities Planning System (SFPS) Report Base Loading, projects the assignment of men, ships, and planes to activities through the next 5 years.

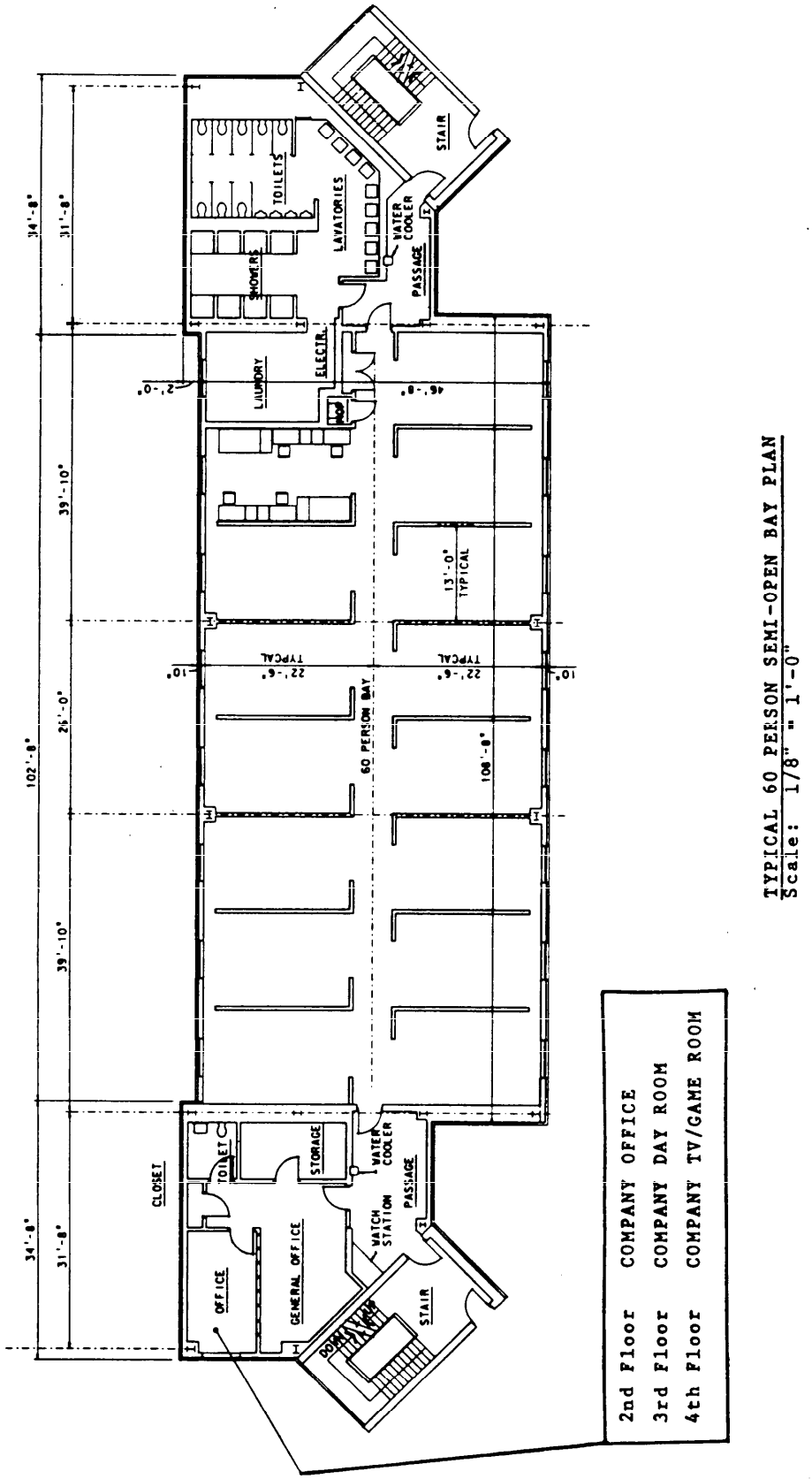
c) Development of the Basic Facilities Requirements to support the assigned mission and loading, using planning criteria published by the Naval Facilities Engineering Command.

d) Comparison of approved requirements and existing assets at the activity.

e) Determination of excesses and deficiencies. Excesses are evaluated for possible conversion or disposal, and deficiencies are evaluated to determine how they may best be satisfied.

f) Submission of construction projects. For deficiencies that must be met by construction, construction projects are developed and submitted through the major claimants to NAVFACENGCOM, where they are entered in the MILCON Requirements List, an automated data base used in programming.

The design/construction process interface is partly bridged for executing the design of construction projects by the design guidance provided as criteria drawings and specifications developed for selected naval shore facilities.



TYPICAL 60 PERSON SEMI-OPEN BAY PLAN
Scale: 1/8" = 1'-0"

Above drawing not to scale.
Reference: DD-1404366

TITLE	DATE	FACILITY PLATE NO.	SHEET
BACHELOR ENLISTED QUARTERS-CLASS "A" SCHOOL STUDENTS	OCT 86	721 - 14	1

Figure 3
Sample Facility Plate (Based on Definitive Design 1404366)

Section 2: POLICY

2.1 Requirement. Base the creation or revision of criteria drawings or specifications on functional requirements or facilities technology changes as determined by the major claimant, Engineering Field Divisions (EFDs), Public Works Centers (PWCs), Navy functional managers, and weapons systems managers. Research existing criteria to avoid duplication.

For example, contact the Naval Air Systems Command, Facilities Management Division, to determine functional requirements to be included in criteria for aircraft facilities. Similarly, contact Headquarters, Marine Corps, Facilities and Services Division, to determine functional requirements to be included in criteria for Marine Corps facilities.

The standard and definitive design program is administered by NAVFACENGCOM Headquarters. The Engineering Field Divisions have been delegated responsibility for updating the drawings and specifications. NAVFACENGCOM Code DS02 maintains the current standard and definitive drawings (originals) and a 105-mm film of each drawing. NAVFACENGCOM Code DS02 also maintains an index and a 105-mm film of cancelled standard and definitive drawings.

2.2 Update Cycle. The drawings are reviewed on a 3-year cycle and must be validated, revised, or cancelled by the time they are 5 years old. Drawings and standard specifications 5 years old or older will be removed from the program, if no update action has been taken.

2.3 Review Process. The review process by the preparing activity (PA) shall include:

a) Determination of the requirement for the specific design:
Is this type of facility in use?
Are they being built now?
Is future construction planned? Etc.
(Survey-major claimants, EFDs, and other activities).

b) After a requirement is defined, a state-of-the-art search should be made for that particular type of facility.

c) After considering comments from EFDs and other activities, the drawing is (1) retired, (2) cancelled, (3) validated, (4) revised or, (5) replaced by a new drawing. See Section 4 for required processing actions.

2.4 Program Appraisal.

a) NAVFACENGCOM Code DS02 will perform an annual requirements survey by letter to the sponsor to determine the needs and functional requirements for new or existing (3 years old or more) documents before initiating a revision or validation.

b) Preparing activities will be surveyed annually by individual correspondence to determine facility technology requirements for the documents.

c) Preparing activities will each establish an annual investment plan and an updated 5-year plan.

d) Preparing activities will consider documented state-of-the-art survey comments to appraise and improve quality when initiating a revision, validation, or development of criteria.

e) Preparing activities will consider criteria deficiencies identified in post occupancy evaluations during revision, validation, or development of criteria.

f) NAVFACENGCOM Code DS02 Program Managers will review the MCON Program annually to assist in determining the priority of accomplishing the annual criteria program, after reviewing the EFD's proposed priority lists.

g) NAVFACENGCOM Code DS02 will publish annually an approved FY investment plan and an updated 5-year plan.

h) NAVFACENGCOM Code DS02 will perform monthly appraisals and quarterly appraisals of performance via the Goal Progress Reporting System.

i) NAVFACENGCOM Code DS02 will review the Engineering Criteria Management System and call for monthly Impending Action Reports, in order to maintain adequate performance against the plan and provide appropriate priority changes to meet unforeseen conditions.

2.5 Data Sources.

2.5.1 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 P-80, Facility Planning Criteria for Navy and Marine Shore Installations.

c) NAVFAC Criteria Manuals and Military Handbooks.

d) NAVFAC Guide Specifications.

2.5.2 Department of Defense.

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

b) Military Standards are mandatory documents issued within the Department of Defense in accordance with the basic policy contained in DOD Directive 4120.3, Defense Standardization Program. These documents establish the engineering and technical limitations and applications for items, materials, processes, methods, designs, and engineering practices for use with DOD projects where non-Government standards cannot be used.

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

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

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

2.7 International System of Units. For dimensions on standard or definitive drawings and in standard specifications, use customary U.S. dimensions, unless special approval to use metric design is obtained from NAVFACENGCOM Code DS02. Do not include metric provisions, such as metric equivalence charts.

2.8 In-House Development. Develop or revise criteria in-house to the maximum extent possible for effective long-term interpretation and consultation and to maintain expertise in the subject area.

2.9 Computer-Aided Design/Drafting (CADD). The use of computer graphics systems for design and production of drawings has resulted in increased productivity and more accurate drawings. A/Es are encouraged to use computer-aided design 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 or systems capable of providing an equivalent (CADDS 4X) compatible data base through a conversion process.

2.10 Facility Plates. Use facility plates or facility room layout plates instead of definitive designs whenever they will effectively convey the necessary design data. Include facility plates or facility room layout plates in the related facility-type criteria manual. Consider preparing facility plates instead of definitive designs whenever definitives are scheduled to be developed, revised, or validated.

This policy applies mainly to conceptual definitive designs as contained in NAVFAC P-272, Part I. These definitives have relatively simple floor plans and functional layouts that can be delineated graphically with few facility plates.

2.11 Value Engineering. When developing or revising criteria, the value engineering methodology shall be applied to ensure our Navy and Marine Corps facilities will be functional, economical, durable, livable and straightforward in styling. Facilities must not only be responsive, responsible, and defensible, but must appear logical and conservative. Documentation of one page in length shall be provided with all final submittals to verify the document has been value engineered and the criteria is appropriate for the facility.

Section 3: DEVELOPING OR REVISING DEFINITIVE OR STANDARD DESIGNS

3.1 Responsibilities of the Preparing Activity. In addition to the responsibility of working with the major claimant as discussed in Section 2, the preparing activity (PA) is responsible for evaluating assigned criteria when each document approaches an age of 3 years. As a part of this evaluation, consider advances in the state-of-the-art or changes in functional requirements that could affect its worth.

3.1.1 Engineering Criteria Management System (ECMS). If the criteria requires revision, the PA shall enter all required information in the ECMS data base--planned start date, A/E contract amount estimate (if criteria will not be revised in-house), and in-house resource requirement. Investment Plans will be in the form of a report derived from the ECMS data base. About mid-year, NAVFACENGCOM Code DS02 will extract the Investment Plans from the data base. Criteria listed on the Investment Plans will be considered for allocation of resources for the following fiscal year. For each criteria document requiring revision and so noted in the data base, supply a short project description, including justification defining benefits to the Navy, and a cost estimate for the project. NAVFACENGCOM Code DS02 will combine all Preparing Activity Investment Plans for consideration by the Headquarters Engineering Board for inclusion in the ensuing fiscal year program.

3.1.2 Preparing Activity. The PA is responsible for:

a) Certifying that there is a need for the criteria.

b) Writing the scope of work, whether for in-house or contractor.

c) Ensuring preparer adherence to guidelines and schedules.

d) Updating Engineering Criteria Management System (ECMS) data base.

e) Monitoring the coordination review process.

f) Rejecting inferior submissions.

g) Ensuring that the criteria fulfill all the requirements of the scope of work.

h) Certifying a thorough review of criteria package.

i) Ensuring that the package transmitted to NAVFACENGCOM Code DS02 for publication contains all required information.

3.2 Scope of Work. The scope of work for a preparer or an architect/engineer contract for the development of a new or revised criteria drawing must be clear and concise. It must clearly define the work to be done, submittals, sequence of work, and general provisions required of the preparer, as well as the Government's role in the project. Appendix A is an example of a scope of work.

3.3 Responsibilities of the Preparer. The preparer may be a private contractor, i.e., architect/engineer (A/E) firm licensed in its home state, when the work cannot be accomplished in-house. Preparer responsibilities must include the following:

3.3.1 Review of Existing Publications. Review publications listed in the scope of work for guidance or reference in criteria under development or revision.

3.3.2 References to Other Design Guidance. Make use of existing design guidance in a reference mode. Any reference to existing guidance must carry the date of such guidance.

3.3.3 Life-Cycle Costing. Emphasize a life-cycle cost analysis as part of the engineering analysis, when applicable. Place cost estimating information on definitive designs.

3.3.4 Certification of Preparer. Certify that all required scope of work items, including essential comments received, have been included in the completed criteria. See Figure 4, Criteria Preparation Two-Part Checklist Sign Off Sheet.

3.4 Phasing of Work. The scope of work must state what is required of the preparer at each of the following phases of criteria development or revision.

3.4.1 Preliminary Submission. If criteria are being prepared by an A/E firm, request a preliminary submission to confirm that the preparer is on target. This allows for early resolution of any misunderstandings. The preliminary submission must address the concerns listed in the scope of work. If criteria are new, the submission should include sketches and a narrative statement of objectives and how they are to be met. If it is a revision, include a copy of the existing criteria marked to show anticipated areas of change. Send this submission to NAVFACENGCOM Code DS02 for approval. NAVFACENGCOM Code DS02 will respond within 30 days of receipt of preliminary submission.

3.4.2 Coordination Phase. For the purpose of coordination, the criteria should be at least 90 percent complete. (See Section 8: COORDINATION.)

3.4.3 Additional Pre-Final Submissions. If criteria are being prepared by an A/E firm, the Government may request any additional submissions between the coordination phase and final submission that it deems necessary.

3.4.4 Final Submission. The criteria are submitted by the PA to NAVFACENGCOM Code DS02. The final submission shall include the following:

a) Originals of all drawings;

b) One set of camera-ready copy (originals) of each standard specification in final form;

c) Magnetic media; one ASCII-code-readable, 5 1/4-inch (130-mm), 360Kb, double-sided, double-density diskette of the text, such as Volkswriter or Navy SPECSINTACT format.

d) One hard-copy and one disk of all reviewing activity comments and PA resolution of these comments as prepared in accordance with the procedure in Appendix B;

e) Original of NAVFAC 5720/6 (Rev 10-81), Publication Security Review and Clearance, with Part I fully executed;

f) Criteria Preparation Two-Part Checklist Sign off Sheet (see Figure 4).

3.5 Criteria Development Schedule. The Engineering Criteria Management System (ECMS) divides the work into seven stages (A through G), of which the preparer must be aware for completion of the criteria. These seven stages represent 540 calendar days--approximately 18 months' time--on the part of the PA and publication within 2 months of receipt by NAVFACENGCOM Code DS02. These work stages are interpreted below.

ECMS "A-START" This is the date the contractor is provided a notice to proceed or in-house criteria development or revision begins.

ECMS "B-FIRST" This is the preliminary submission as described in Paragraph 3.4.1. It is 150 days (5 months) after the "A-START" phase; however, the PA may require any number of unofficial submissions necessary prior to "B-FIRST" stage. This submission is sent to NAVFACENGCOM Code DS02 for approval.

ECMS "C-COORD" One hundred twenty days (approximately 4 months) after the preliminary submission, the 90-percent-complete document is disseminated for coordination in accordance with Section 8.

ECMS "D-RESOL" All comments must be resolved within 90 days (approximately 3 months) after "C-COORD" stage. This is the date the criteria are returned to the preparer for the development of the final product.

ECMS "E-FINAL" Submit the final criteria to the PA Criteria Manager 90 days (approximately 3 months) after "D-RESOL" stage.

ECMS "F-SUBMIT" The PA will submit the complete criteria development package to NAVFACENGCOM Code DS02 90 days (approximately 3 months) after the "E-FINAL" stage. New drawings should be submitted for approval at least 30 days prior to the end of the fiscal year, in order to ensure that goal credit will be received.

ECMS "G-APPVL" Within 60 days (2 months) of submittal, NAVFACENGCOM Code DS02 should approve the criteria for publication and release it.

Preparing Activity: _____

Date: _____

Drawing Number(s): _____

Title: _____

The following members of my activity/firm developed this (definitive design) (standard design) (and standard specification).

Professional Registration

Name and Title	Discipline
Number/State	

As EIC/AIC or A/E Firm who prepared this (definitive design) (standard design) (and standard specification), I certify that all required scope of work items are included.

Preparer: _____

Address: _____

_____ Phone: _____

(Signed) _____

(Title) _____

(Date) _____

Figure 4
Sample Criteria Preparation Two-Part Checklist
Sign Off Sheet

EIC/AIC: _____ Date: _____

1. AS EIC/AIC, I CERTIFY THAT the (definitive design) (standard design) (and standard specification) has been thoroughly reviewed and:
1.1 All work is technically and administratively correct and in compliance with the state-of-the-art and major claimant functional requirements;
1.2 There are no unresolved essential comments;
1.3 It contains no proprietary design/systems (unless specifically identified and justified), or classified material;
1.4 It fulfills scope of work as approved by NAVFACENGCOM Code DS02;
1.5 All references are correct, current, and complete;
1.6 It does not duplicate or conflict with any existing or planned NAVFAC criteria, except as specifically documented and approved by NAVFACENGCOM Code DS02;
1.7 Related criteria have been reviewed and needed changes documented to appropriate Preparing Activity Criteria Manager for immediate action;
1.8 The package forwarded for publication contains all documents specified in 3.4.4, Final Submission, of MIL-HDBK-1006/4.
1.9 Criteria are complete and can be released to the public.

Signature and Registration Number: _____

2. Branch Manager: _____ Date: _____

AS ___ BRANCH MANAGER, SUPERVISOR OF EIC/AIC, I CERTIFY:
2.1 That all responsibilities required of EIC/AIC have been completed;
2.2 To the effectiveness and usability of the criteria for EFD, PWC, PWD, and A/E use for NAVFAC engineering and design.

Signature and Registration Number: _____

3. Editor: _____ Date: _____

AS CRITERIA EDITOR, I CERTIFY:
3.1 Drawings conform to MIL-HDBK-1006/4;
3.2 Criteria are administratively complete and correct;
3.3 A spot check has been made of magnetic disk to ensure disk matches textural material exactly and all program capabilities are fully operable.

Signature: _____

4. Criteria Manager: _____ Date: _____

AS CRITERIA MANAGER, I CERTIFY:
4.1 That all required signatures are affixed;
4.2 A spot check has been made to ensure each signer has met responsibility;
4.3 Criteria adheres to NAVFAC policy;
4.4 NAVFACENGCOM Code DS02 comments have been incorporated;
4.5 That DoD similar document exists (or does not exist) and a coordination plan is enclosed.

5. PA Design Director _____ Date: _____

AS PA DESIGN DIRECTOR, I CERTIFY:
5.1 Overall technical/functional adequacy of the criteria.

Signature and Registration Number: _____

Figure 4 (Continued)
Sample Criteria Preparation Two-Part Checklist
Sign Off Sheet

Section 4: REQUIREMENTS AND PROCEDURES FOR DEFINITIVE AND STANDARD DESIGNS

4.1 Military Standard. Prepare all drawings in accordance with DOD-STD-100, Engineering Drawing Practices.

4.2 Drawing Size. Two drawing sizes are used for definitive and standard designs: D-size sheets (22 x 34 inches) and F-size sheets (28 x 40 inches). D-size sheets are preferred being more cost-effective than F-size sheets. F-size sheets are an acceptable alternative to D-size sheets for manually-preparing minor revisions of or revalidating existing F-size drawings.

4.3 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.

4.4 Conventions and Symbols. These must be clearly identified on the drawings and used consistently in accordance with the following:

a) Conventions. For line, section, and sectioning conventions, see ANSI Y14.2M, Line Conventions and Lettering, Engineering Drawing and Related Documentation Practices. In order that building sections, elevations, wall sections, and details may be located and identified on the drawings, the method of identification illustrated in Figure 5 should be used.

b) Abbreviations. MIL-STD-12, Abbreviations.

c) Civil Engineering Symbols. Abbet, American Civil Engineering Practice, Volume 1.

d) Architectural Symbols. Ramsey and Sleeper, Architectural Graphic Standards, 1981 Edition.

e) Structural Symbols. MIL-STD-18, Structural Symbols.

f) Mechanical Symbols. MIL-STD-17, Mechanical Symbols.

g) Electrical and Electronic Symbols. ANSI Y32.9, Graphic Symbols for Electrical Wiring and Layout Diagrams Used in Architecture and Building Construction.

h) NAVFACENGCOM has a library of symbols for computer-aided design/drafting (CADD) that should be used when definitive or standard designs are produced by computer graphics. Consult the Engineering Field Division (EFD) CADD Coordinator for details.

4.5 Lettering.

a) Use upper-case lettering.

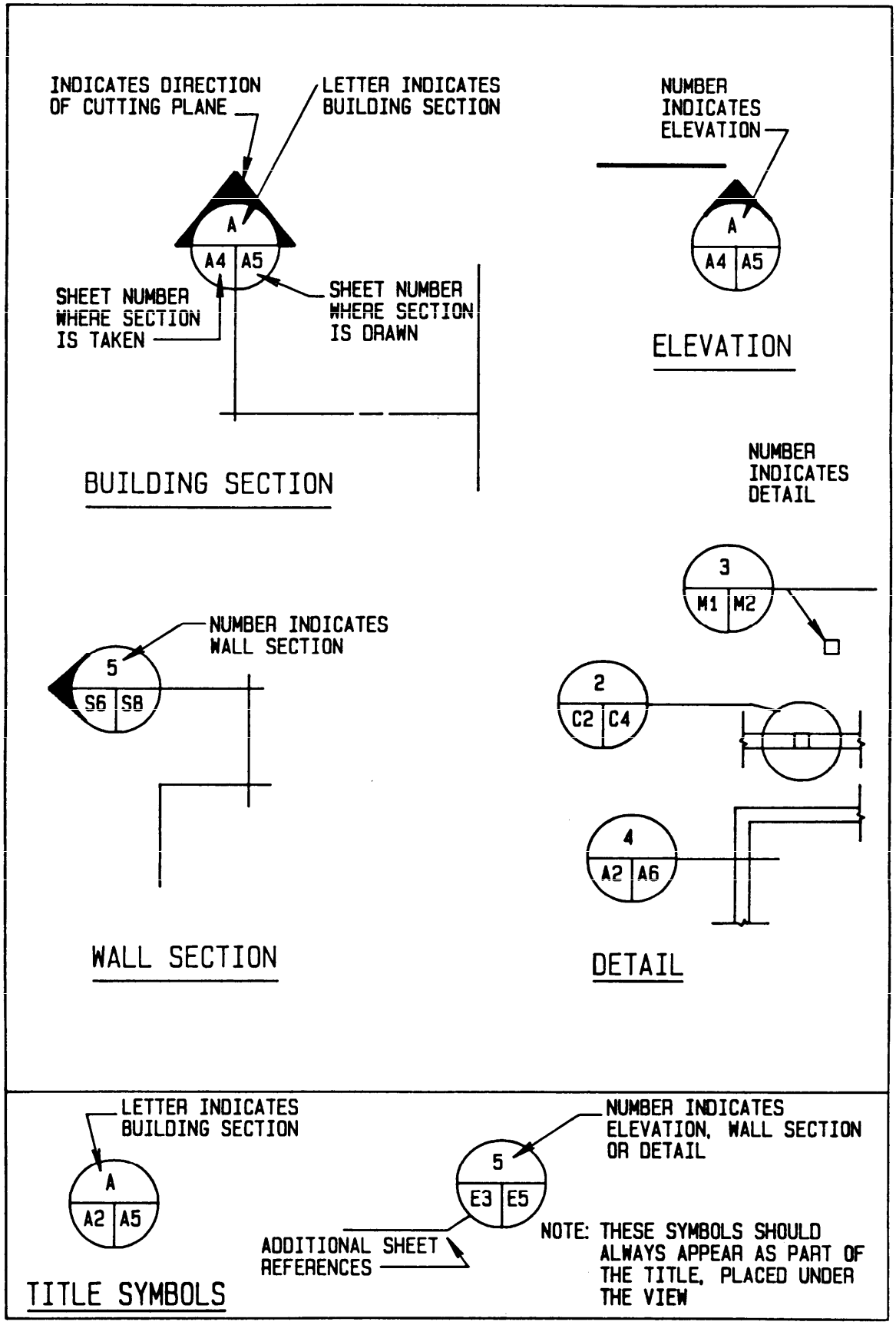


Figure 5
Symbols To Identify Sections, Elevations, and Details

b) The minimum allowable height of letters shall be: freehand - 5/32 (0.156) inch and mechanical - 0.150 inch.

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

4.7 Drawing Revisions. Revisions of drawings shall be made according to the requirements of DOD-STD-100. The revision block shall be provided on all NAVFAC definitive and standard designs. The layout of the revision block shall be as shown with the title blocks in the figures provided. If the revisions are extensive, prepare a new NAVFAC drawing.

4.8 Drawing Medium. Polyester-base film, matte-finish, 0.005-inch-thick is the preferred medium for drawings. Polyester-base film, matte-finish, 0.003-inch-thick, or heavy-duty vellum are acceptable alternates. Ink drafting is preferred for either medium, but pencil drafting that produces sharp, dense, clean-cut lines is acceptable.

4.9 Reproducibles. Reproducibles shall conform to the requirements of MIL-D-5480, Data, Engineering and Technical, Reproduction Requirements for. Reproducibles shall be provided on 0.003-to 0.005-inch polyester plastic film by photographic methods.

4.10 Graphic Scale. Provide all NAVFAC drawings with graphic scales, one for each scale used on the drawing.

4.11 Claimant Review and Approval. NAVFACENGCOM will submit definitive and standard designs to major claimant for review and acceptance as to functional suitability. The major claimant's approval should be indicated by a signature and date in the "Satisfactory to" block on the drawing.

4.12 Retention of Data.

4.12.1 Design Computations. Design computations, diagrams, and sketches shall be set down either in books or looseleaf binders. These books or binders shall be identified by definitive or standard drawing title and drawing numbers. The completed books or binders shall be retained by the PA in a permanent file.

4.12.2 Criteria File. The PA shall keep a permanent file for each definitive or standard design that is developed or revised. The file shall contain all correspondence, meeting notes, and rationale for major decisions.

4.12.3 Film System. Definitive and standard designs are filmed at NAVFACENGCOM on 105 mm film.

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

4.14 Drawing Files. NAVFACENGCOM Code DS02 will maintain the file of original drawings for definitive and standard designs.

4.15 Retirement. When the PA notifies NAVFACENGCOM that a drawing is scheduled to be incorporated into other criteria or that there is no current requirement for the drawing, the drawing will be retired. The drawing will remain in the EMCS in a retired status and cannot be used without the approval of the PA. If after a year there is still no requirement, the drawing will be cancelled.

4.16 Cancellation. When a drawing has been superseded, a requirement for it does not exist, or the design information is not current, the PA will return it to NAVFACENGCOM Code DS02 requesting cancellation and recording. The drawing will be stamped "obsolete," filmed, and recorded. Cancelled drawings will be deleted from the Engineering Criteria Management System. The original drawing will be destroyed after filming.

4.17 Validation. The drawing information is current as is. The PA will complete and approve the revision block. The PA keeps the record copy and forwards the original to NAVFACENGCOM Code DS02 for recording and distribution.

4.18 Revision. The PA will schedule the criteria for revision and make the necessary adjustments to criteria plans.

4.19 Replacement. Prepare a new drawing using the NAVFAC standard title block and the drawing number assigned from NAVFACENGCOM Code DS02. The PA completes its portion of the title block and forwards the drawing to NAVFACENGCOM Code DS02 for approval signature and date.

Section 5: PREPARING DEFINITIVE DESIGNS

5.1 Objectives. Definitive designs are issued by NAVFACENGCOM to define the minimum functional and engineering requirements for buildings and structures needed on a repetitive basis. Definitive designs are intended to provide a uniform basis for planning and design. Pertinent legal and administrative limitations are incorporated in the definitive designs. Definitive designs are for design guidance and are complemented by NAVFAC criteria manuals, military handbooks, and NAVFAC P-80.

5.2 Drawing Notes. Locate the note column along the right side of the drawing. Drawing notes provide, when applicable, the requirements for plumbing, heating, air conditioning, electricity, area, and general requirements.

5.3 Title Blocks. Figures 6 and 7 provide guidance for completing the title blocks. Include in the title block the identifying drawing number, the PA (including A/E contractor when applicable), and surnames of personnel concerned with preparation of the drawings. The code identification number '80091' shall appear in the title block of all NAVFACENGCOM drawings. Complete guidance for preparation of the title block is shown on the page following the figure. Do not use decals on the backs of drawings, because they will not reproduce on microfilm.

5.4 Drawing Numbers. Assign one NAVFAC serial drawing number to each drawing. The minimum height for these numbers is 1/4-inch. This number shall NOT be assigned later to any other drawing. When extensive revision of a drawing requires preparation of a new drawing, assign a new number to the new drawing and place the following notes on the respective drawings directly above or adjacent to their title blocks:

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

Use a consecutive series of numbers for all drawings of a definitive design. Drawing numbers will be assigned by NAVFACENGCOM Code DS02.

5.5 Distribution. NAVFACENGCOM Code DS02 will distribute drawings in accordance with Table 1.

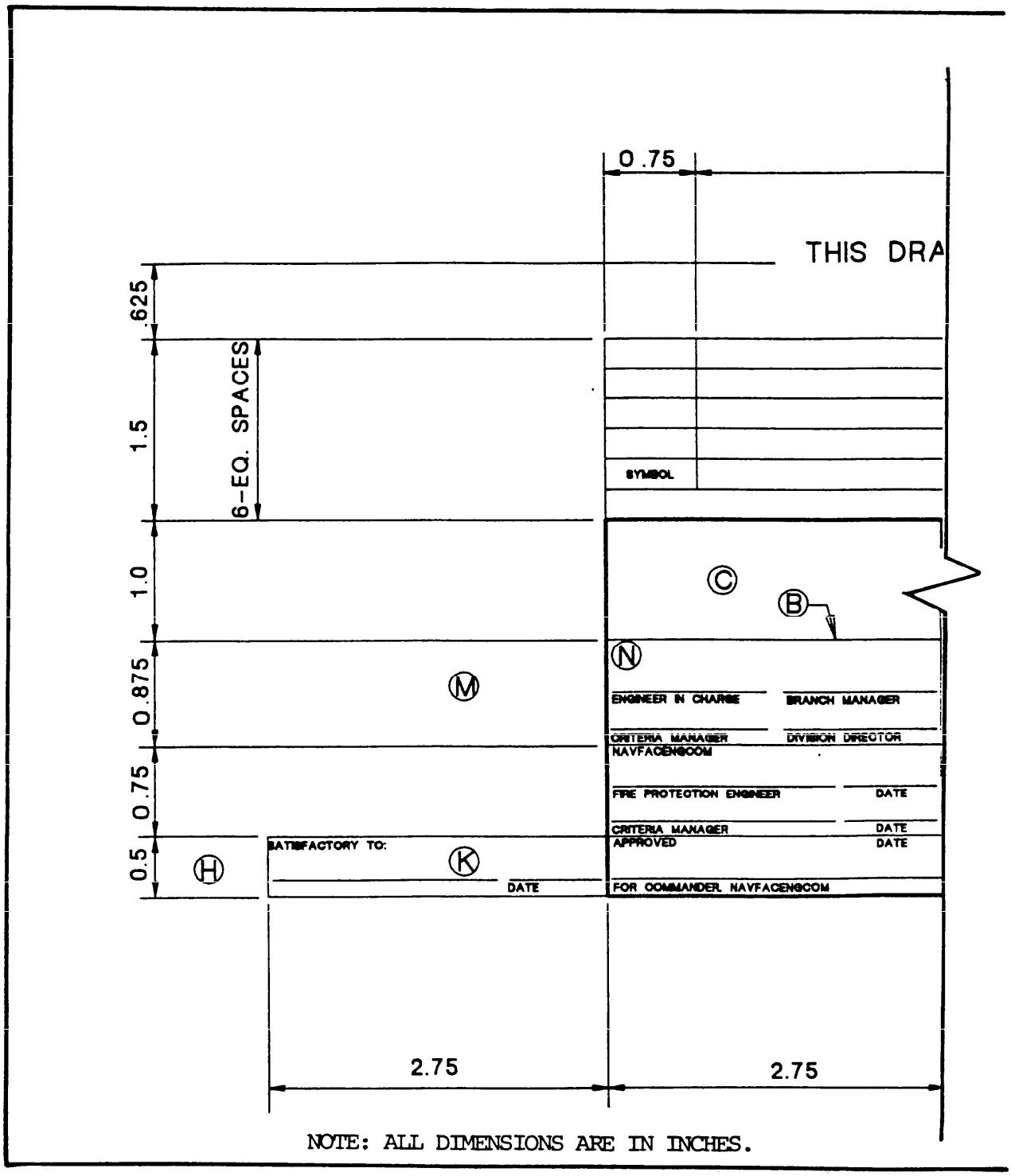
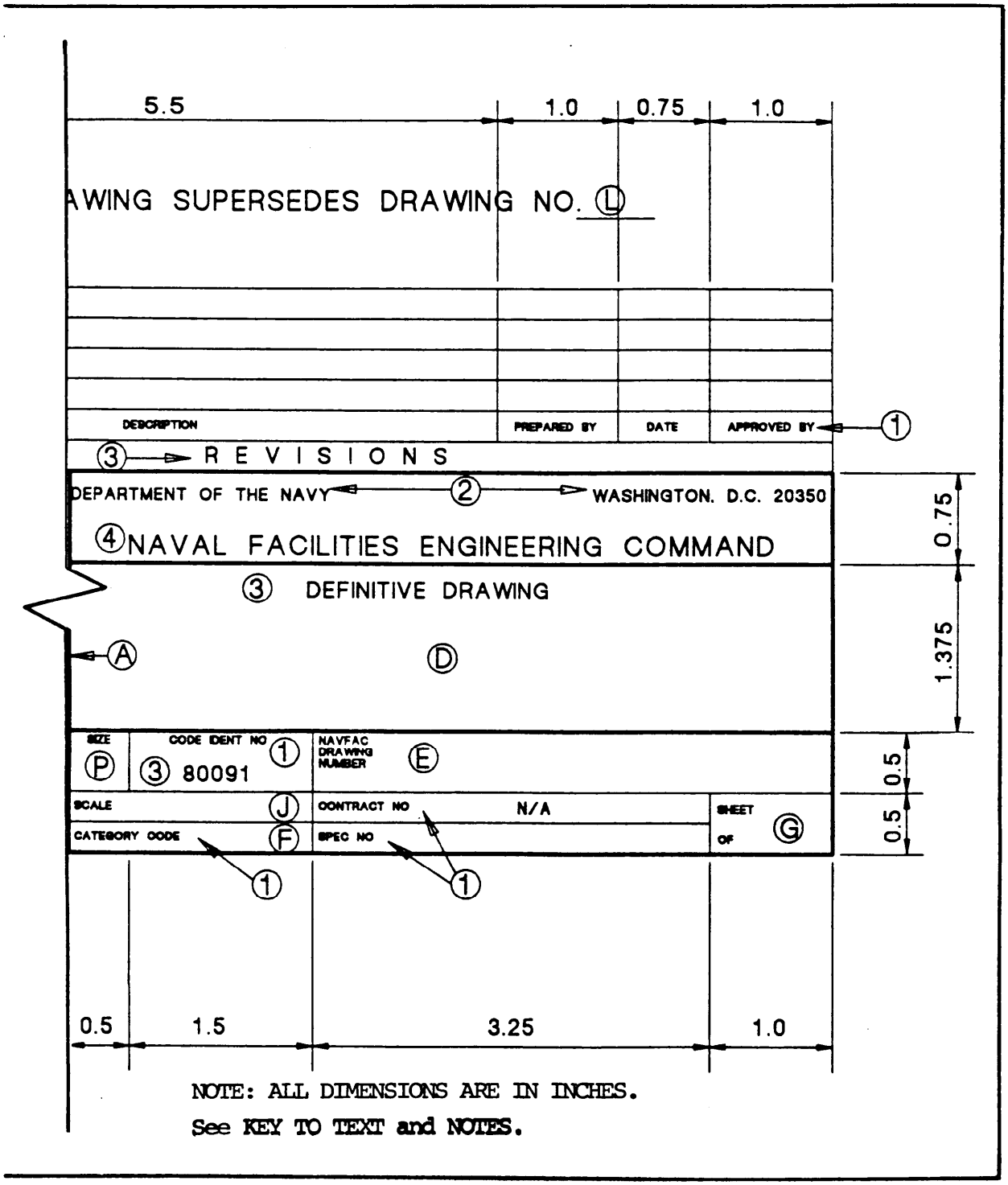


Figure 6
Definitive Drawing Title Block Guidance



NOTE: ALL DIMENSIONS ARE IN INCHES.

See KEY TO TEXT and NOTES.

Figure 6 (Continued)
Definitive Drawing Title Block Guidance

KEY TO TEXT

1. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .062
   TEXT WIDTH: .062

2. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .094
   TEXT WIDTH: .094

3. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .125
   TEXT WIDTH: .125

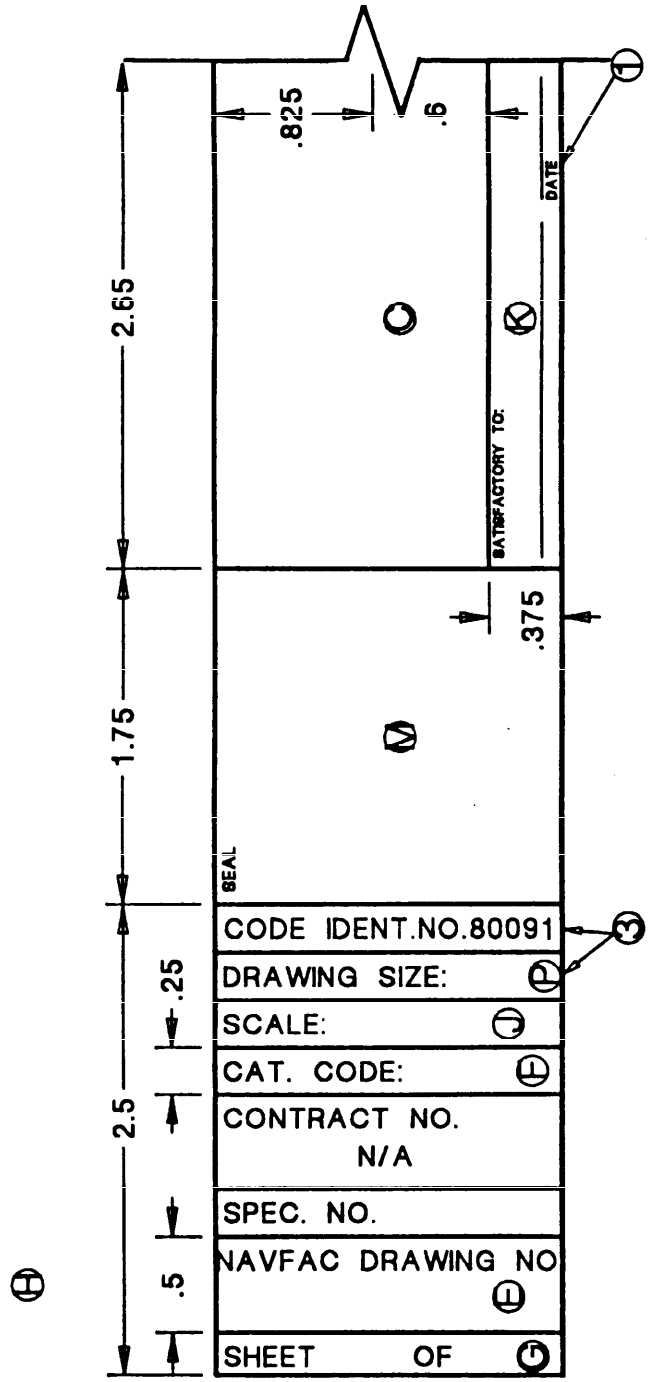
4. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .156
   TEXT WIDTH: .156

5. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .250
   TEXT WIDTH: .250

NOTES

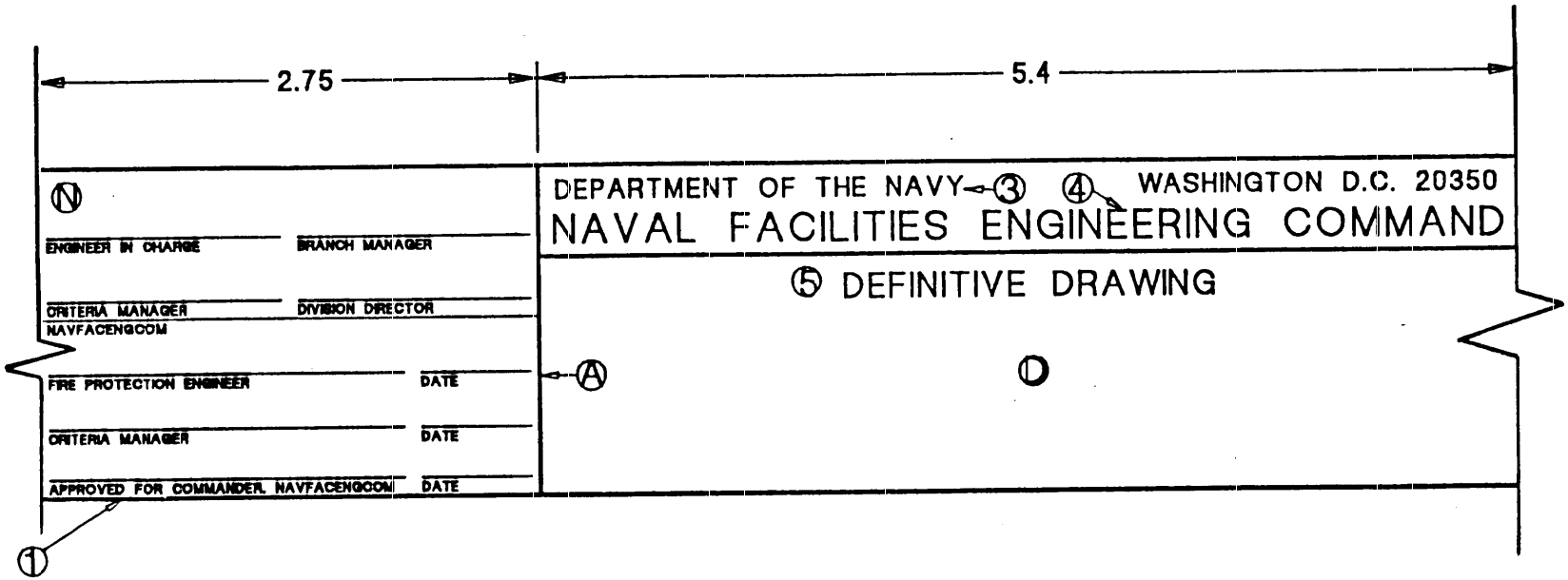
A. HEAVY LINES. TYPICAL FOR BORDERS.
B. MEDIUM WEIGHT LINES.
C. NAME AND ADDRESS OF PREPARER: A/E CONTRACTOR, IF BY CONTRACT, INCLUDE PRINCIPAL'S SIGNATURE AND DATE EFD. IF IN-HOUSE
D. ENTER DRAWING TITLE.
E. ENTER DRAWING NUMBERS. USE LETTER SIZE 5 OF KEY TO TEXT.
F. ENTER CONSTRUCTION CATEGORY CODE. USE LETTER SIZE 3 OF KEY TO TEXT.
G. IF PREPARED AS A SET, ENTER NUMBERS. IF A SINGLE DRAWING, ENTER 1 OF 1.
H. PLACE GRAPHIC SCALES HERE.
J. ENTER "AS NOTED" OR THE SCALE IF ONLY ONE SCALE IS USED.
K. USE BOX IF THERE IS A MAJOR CLAIMANT. LABEL NAME BELOW LINE.
L. USE NOTE IF THERE IS A FORMER DRAWING. FILL IN FORMER NUMBER, USING LETTER SIZE 2 OF KEY TO TEXT.
M. PLACE SEAL HERE.
N. SHOW NAME OF PREPARING ACTIVITY, USING LETTER SIZE 1 OF KEY TO TEXT.
P. ENTER D OR F, AS APPLICABLE.

Figure 6 (Continued)
Definitive Drawing Title Block Guidance



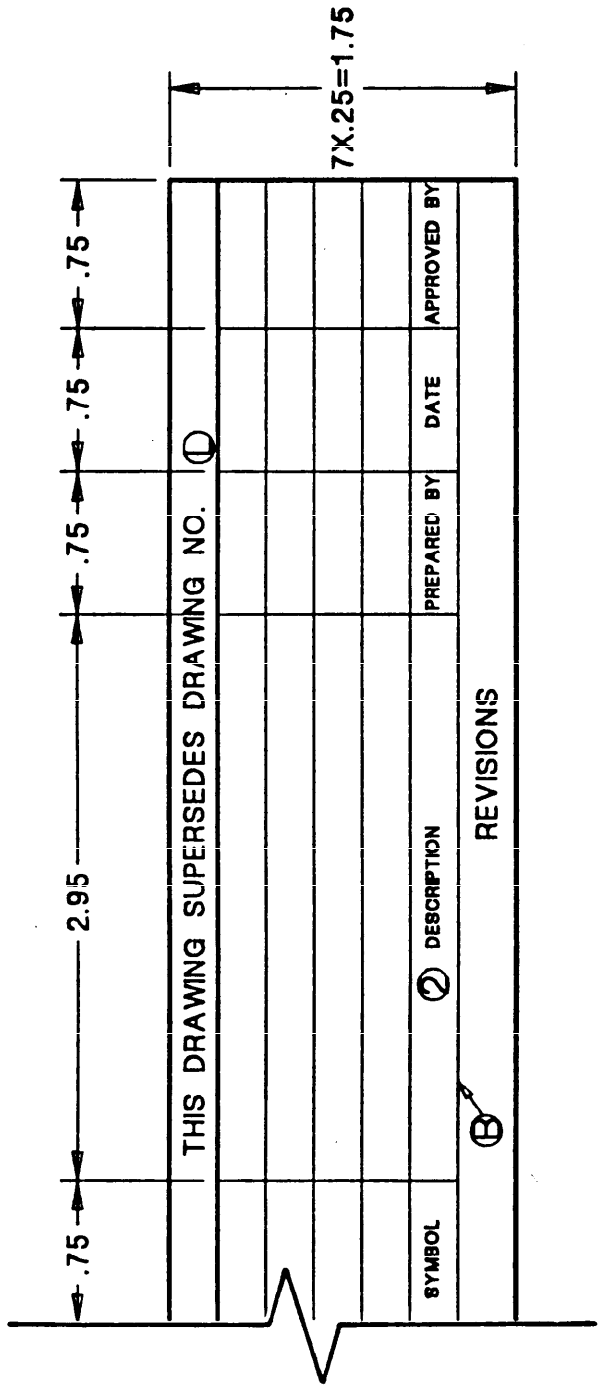
NOTE: ALL DIMENSIONS ARE IN INCHES.
See KEY TO TEXT and NOTES.

Figure 7
Definitive Drawing Verticle Title Block Guidance



NOTE: ALL DIMENSIONS ARE IN INCHES.
See KEY TO TEXT and NOTES.

Figure 7 (Continued)
Definitive Drawing Verticle Title Block Guidance



NOTE: ALL DIMENSIONS ARE IN INCHES.
See KEY TO TEXT and NOTES.

Figure 7 (Continued)
Definitive Drawing Verticle Title Block Guidance

KEY TO TEXT

1. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .05
   TEXT WIDTH: .05

2. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .065
   TEXT WIDTH: .065

3. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .1
   TEXT WIDTH: .1

4. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .155
   TEXT WIDTH: .155

5. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .13
   TEXT WIDTH: .13

6. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .25
   TEXT WIDTH: .25

NOTES

A. HEAVY LINES. TYPICAL FOR BORDERS.
B. MEDIUM WEIGHT LINES.
C. NAME AND ADDRESS OF PREPARER:
   A/E CONTRACTOR, IF BY CONTRACT,
   INCLUDE PRINCIPAL'S SIGNATURE AND DATE
   EFD. IF IN-HOUSE
D. ENTER DRAWING TITLE.
E. ENTER DRAWING NUMBERS. USE LETTER
   SIZE 6 OF KEY TO TEXT.
F. ENTER CONSTRUCTION CATEGORY CODE. USE
   LETTER SIZE 3 OF KEY TO TEXT.
G. IF PREPARED AS A SET, ENTER NUMBERS.
   IF A SINGLE DRAWING, ENTER 1 OF 1.
H. PLACE GRAPHIC SCALES HERE.
J. ENTER "AS NOTED" OR THE SCALE IF ONLY
   ONE SCALE IS USED.
K. USE BOX IF THERE IS A MAJOR CLAIMANT.
   LABEL NAME BELOW LINE.
L. USE NOTE IF THERE IS A FORMER DRAWING.
   FILL IN FORMER NUMBER, USING LETTER
   SIZE 3 OF KEY TO TEXT.
M. PLACE SEAL HERE.
N. SHOW NAME OF PREPARING ACTIVITY, USING
   LETTER SIZE 1 OF KEY TO TEXT.
P. ENTER D.

Figure 7 (Continued)
Definitive Drawing Verticle Title Block Guidance

MIL-HDBK-1006/4

TABLE 1
Drawing and Specification Distribution Chart

TYPE	DISTRIBUTED BY	COPIES FURNISHED	DISTRIBUTION
Definitive	NAVFACHQ	Original Tracing and Microfiche	NAVFACHQ Plan File
		Half-Size Prints	EFDs, OICCs
		Half-Size Prints	PWOs, PWCs
Standard	NAVFACHQ	Original Tracing and Microfilm	NAVFACHQ Plan File COOPLAN FILE (film only)
		Full-Size Reproducibles	EFDs
Standard Specification	NAVFACHQ	Magnetic Disk and Printed Copy	NAVFACHQ Std. Spec. File EFDs, OICC Trident

Section 6: PREPARING STANDARD DESIGNS

6.1 Objectives. Standard designs are detailed working drawings of predominantly specialized structures for unique naval facilities. The purpose of standard designs (and their accompanying standard specifications) is to provide criteria that will assure uniform construction meeting rigid requirements established by the Systems Command and other commands of the Navy. These documents are essentially complete project drawings and specifications that form the basis for the contract documents and require only supplemental drawings and specifications, prepared by an architect/engineer firm or Government architects and engineers, to adapt the facility for the specific site.

Standard designs, except magazine designs, may be modified to meet specific project requirements, if necessary. DO NOT MODIFY AMMUNITION AND EXPLOSIVE STORAGE STANDARDS WITHOUT PRIOR APPROVAL OF NAVFACENGCOM, CODE 04. Magazine designs have been tested for explosive resistance, and modifications are controlled by the DOD Explosives Safety Board. When using a standard design for a construction project, with or without modifications, new title blocks and drawing numbers are required. The cognizant EFD assigns these numbers.

6.2 Current Types. Standard designs are grouped into categories as follows:

a) General. Standard designs in the GENERAL category provide criteria applicable to many facilities.

b) Waterfront Structures. Standard designs in the category of WATERFRONT STRUCTURES provide criteria for the following support components, structures, and systems:

Fittings:	Operational accessories for piers and wharves consisting of bollards, quick-release hooks, bitts, cleats, chocks, capstans, pad eyes, deck drains, and firehole frames and covers.
Brows:	Bridges for providing access to berthed vessels for the embarkation and debarkation of personnel.
Separators:	Floats placed between vessels or between vessels and docks, (camels), designed to distribute wind and current forces acting on vessels.
Portal Crane Track Frogs and Switches:	Devices that permit the wheels on one rail of a track to cross an intersecting rail.

c) Fleet Moorings. Standard designs in the category of FLEET MOORINGS provide criteria for the following systems and components:

Anchors:	Devices embedded in the sea floor to secure the vessel in position.
Buoys:	Floats moored to the seafloor and which providing a surface attachment point for connection to the vessel.
Chains and Chain Fittings:	A series of steel links and the devices for connecting other components to the chain.
Moorings:	Complete riser-type systems in graduated sizes for securing the position of vessels in offshore waters.
Sinkers:	Weights, usually made of concrete, used to assure horizontal loading at the anchor and to absorb energy.
Stake Piles:	Pile-type anchors consisting of a structural steel member driven vertically into the sea floor.

d) Aircraft Operations and Maintenance Facilities. Standard designs in the category of AIRCRAFT OPERATIONS AND MAINTENANCE FACILITIES provide criteria for the following components and facilities:

Aircraft Operations Wheel Chocks:	Blocks for preventing movement of wheels.
Aircraft Maintenance Power Check Facilities:	Structures and supporting components for testing engine power.

e) Ammunition Storage Facilities. Standard designs in the category of AMMUNITION STORAGE FACILITIES provide magazines of various sizes and shapes for the storage of ammunition, missiles, and special weapons. Magazine designs are designated by the shape of the structure and by the primary materials of construction.

6.3 Drawing Notes. General notes are placed 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:

6.3.1 Notes for Structural Drawings. Include, when applicable, roof, floor, wind, seismic, and other loads; allowable soil pressure or pile bearing capacity; and allowable unit stresses of all materials used in the design.

6.3.2 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.

6.3.3 Notes on Computations.

a) Place the assigned serial number of every computation book or binder (Basis of Design) on each drawing in which the design utilizes computations contained in that book or binder.

b) Place computation note above the lower border, to the left of the title block, as follows:

"The Computations for this design are contained in Basis of Design No. XXX (or in Book(s) No. XXX, as appropriate). This information is for the Naval Facilities Engineering Command Headquarters (or the EFD, as appropriate)."

6.4 Title Blocks. Figures 8 and 9 provide guidance for completing the title blocks. Include in title block the identifying drawing number, the PA (including A/E contractor, when applicable), and surnames of personnel concerned with preparation of the drawings. The code identification number '80091' shall appear in the title block of all NAVFACENGCOM drawings. Do not use decals on the backs of drawings, because they will not reproduce on microfilm.

6.5 Drawing Numbers. Assign a NAVFAC serial drawing number to each drawing. The minimum height for these numbers is 1/4 inch. This number shall NOT be assigned later to any other drawing. When extensive revision of a drawing requires preparation of a new drawing, assign a new number to the new drawing and place the following notes on the respective drawings directly above or adjacent to their title blocks:

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

Use a consecutive series of numbers for all drawings of a standard design. Drawing numbers will be assigned by NAVFACENGCOM Code DS02.

6.6 Distribution. NAVFACENGCOM Code DS02 will distribute drawings in accordance with Table 1.

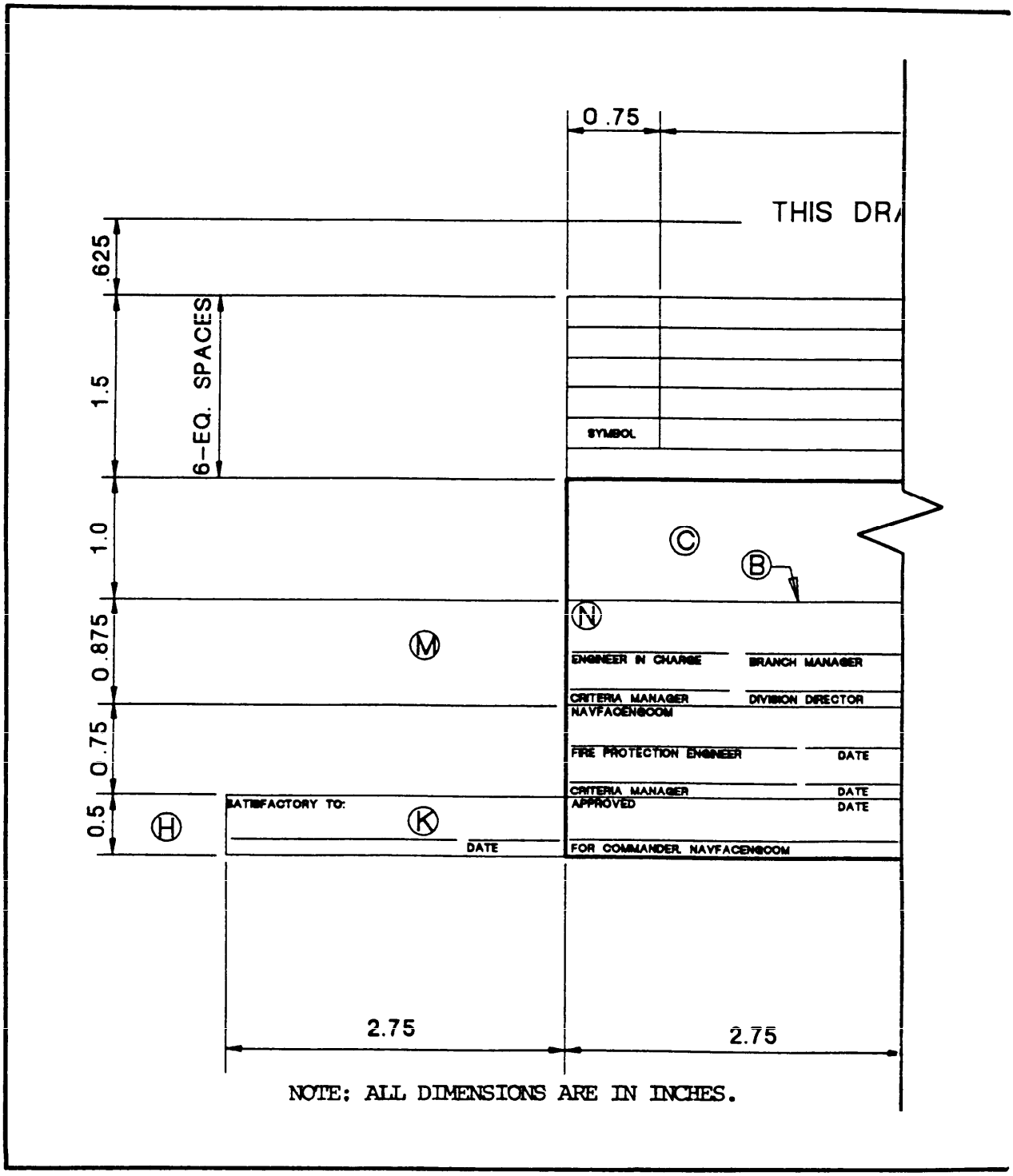
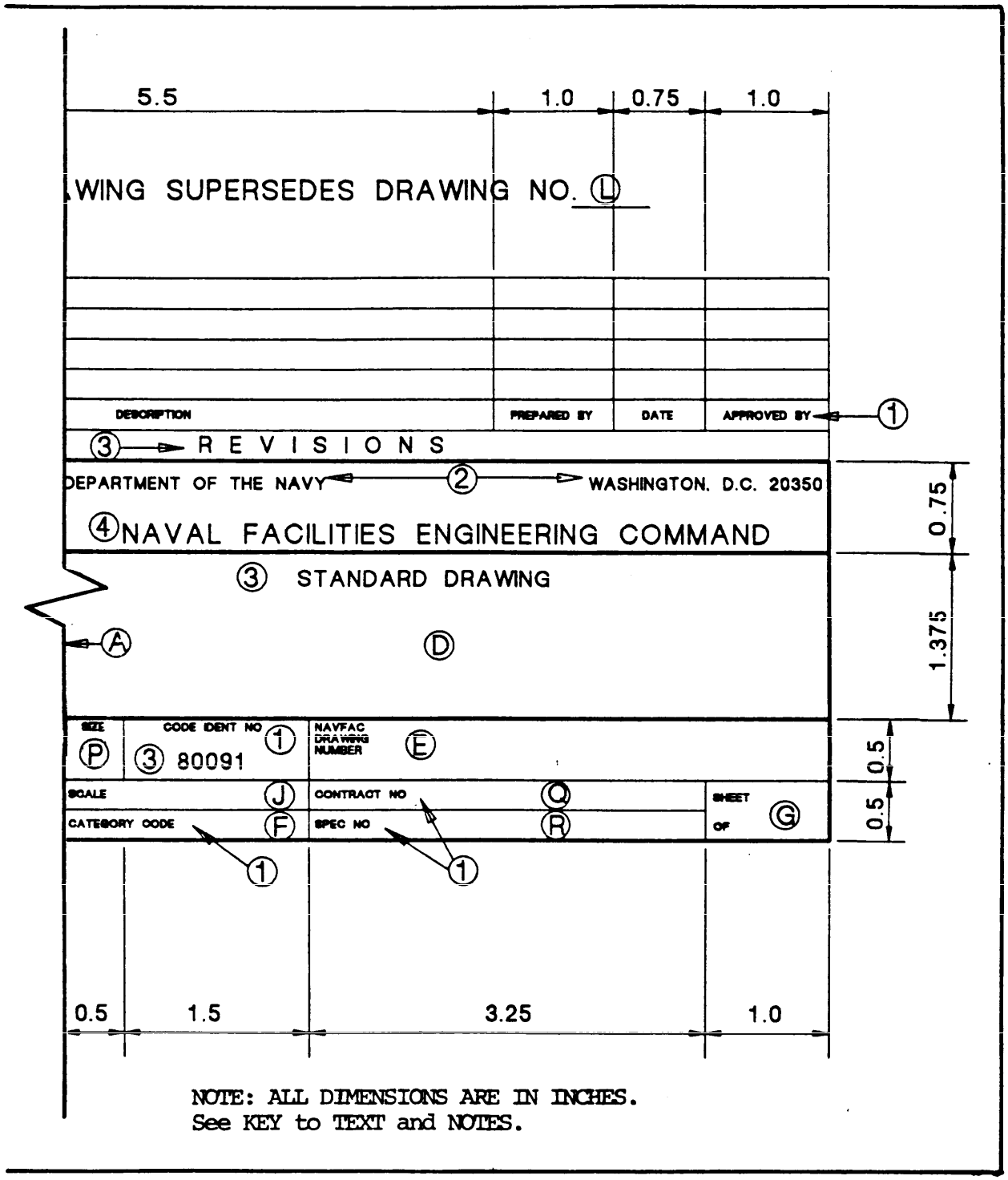


Figure 8
Standard Drawing Title Block Guidance



NOTE: ALL DIMENSIONS ARE IN INCHES.
See KEY to TEXT and NOTES.

Figure 8 (Continued)
Standard Drawing Title Block Guidance

KEY TO TEXT

1. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .062
   TEXT WIDTH: .062

2. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .094
   TEXT WIDTH: .094

3. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .125
   TEXT WIDTH: .125

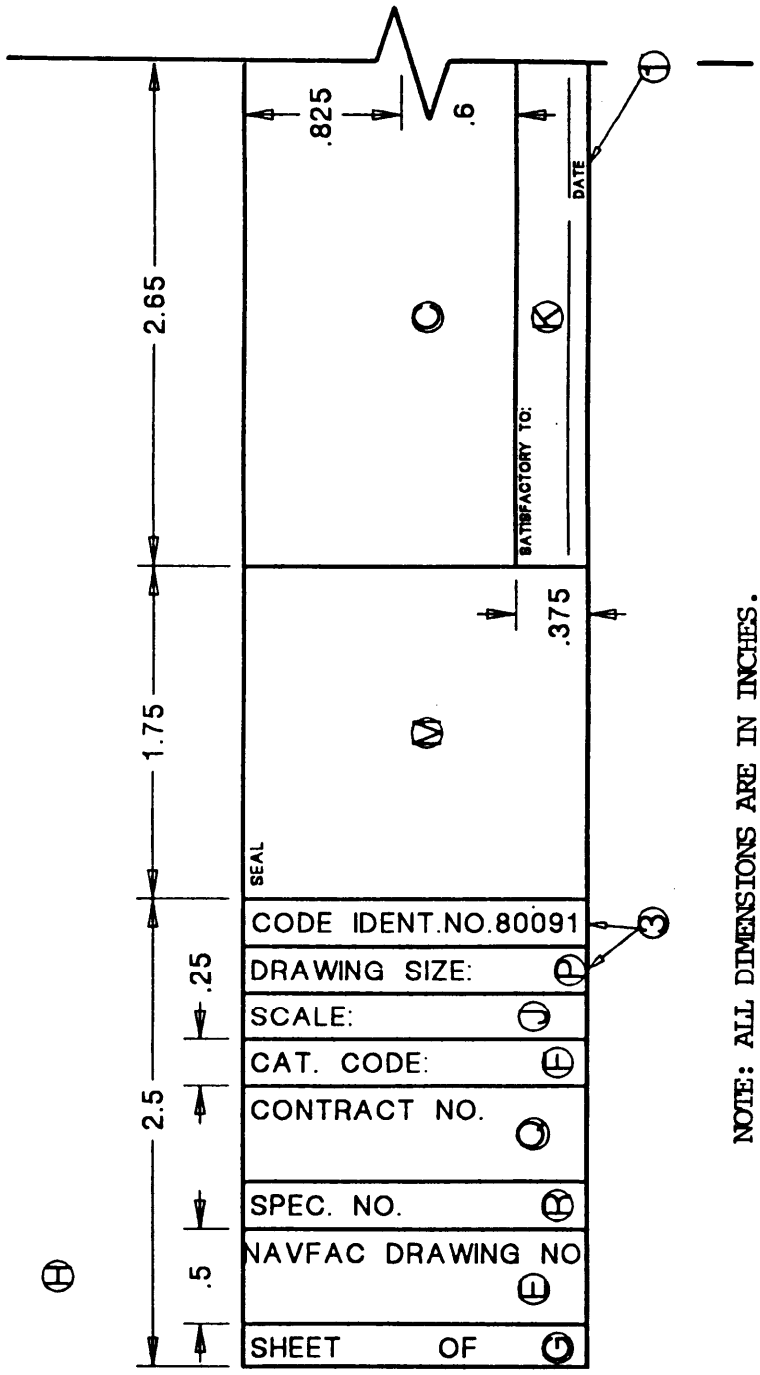
4. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .156
   TEXT WIDTH: .156

5. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .250
   TEXT WIDTH: .250

NOTES

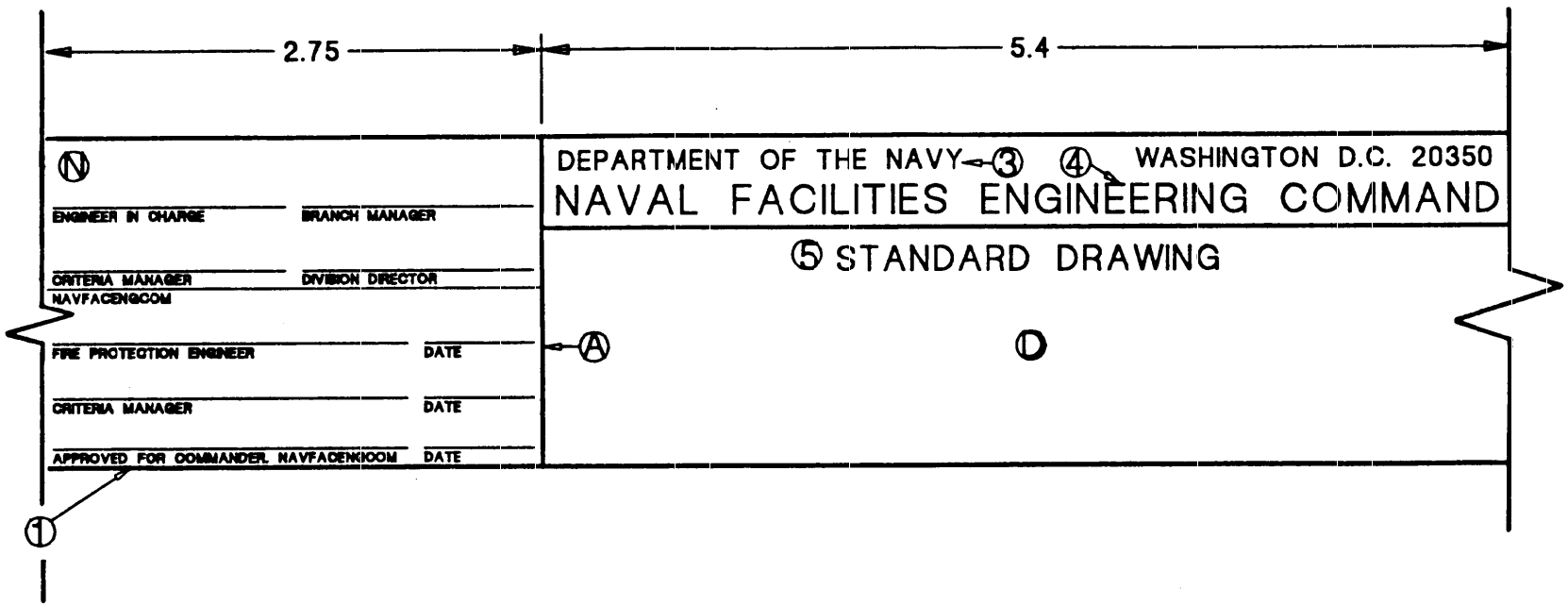
A. HEAVY LINES. TYPICAL FOR BORDERS.
B. MEDIUM WEIGHT LINES.
C. NAME AND ADDRESS OF PREPARER: A/E CONTRACTOR, IF BY CONTRACT, INCLUDE PRINCIPAL'S SIGNATURE AND DATE EFD. IF IN-HOUSE
D. ENTER DRAWING TITLE.
E. ENTER DRAWING NUMBERS. USE LETTER SIZE 5 OF KEY TO TEXT.
F. ENTER CONSTRUCTION CATEGORY CODE. USE LETTER SIZE 3 OF KEY TO TEXT.
G. IF PREPARED AS A SET, ENTER NUMBERS. IF A SINGLE DRAWING, ENTER 1 OF 1.
H. PLACE GRAPHIC SCALES HERE.
J. ENTER "AS NOTED" OR THE SCALE IF ONLY ONE SCALE IS USED.
K. USE BOX IF THERE IS A MAJOR CLAIMANT. LABEL NAME BELOW LINE.
L. USE NOTE IF THERE IS A FORMER DRAWING. FILL IN FORMER NUMBER, USING LETTER SIZE 2 OF KEY TO TEXT.
M. PLACE SEAL HERE.
N. SHOW NAME OF PREPARING ACTIVITY, USING LETTER SIZE 1 OF KEY TO TEXT.
P. ENTER D OR F, AS APPLICABLE.
Q. ENTER CONSTRUCTION CONTRACT NUMBER.
R. ENTER NAVFAC STANDARD SPECIFICATION NUMBER.

Figure 8 (Continued)
Standard Drawing Title Block Guidance



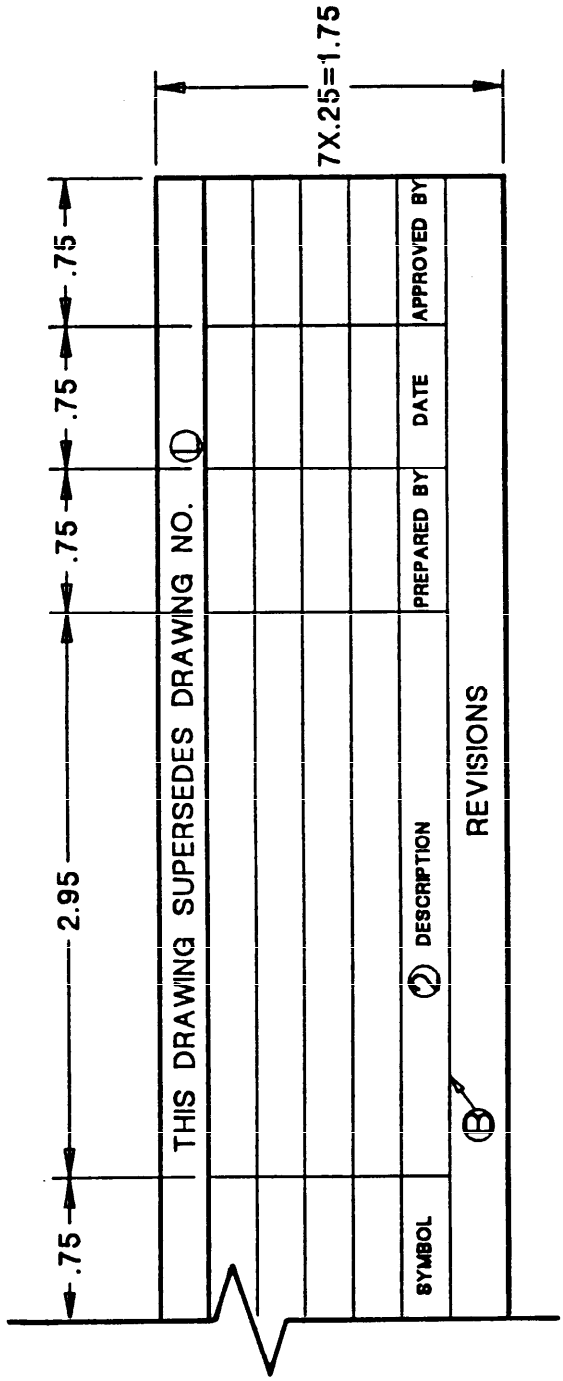
NOTE: ALL DIMENSIONS ARE IN INCHES.
See KEY TO TEXT and NOTES.

Figure 9
Standard Drawing Vertical Title Block Guidance



NOTE: ALL DIMENSIONS ARE IN INCHES.
See KEY TO TEXT and NOTES.

Figure 9 (Continued)
Standard Drawing Vertical Title Block Guidance



NOTE: ALL DIMENSIONS ARE IN INCHES.
See KEY TO TEXT and NOTES.

Figure 9 (Continued)
Standard Drawing Vertical Title Block Guidance

KEY TO TEXT

1. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .05
   TEXT WIDTH: .05

2. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .065
   TEXT WIDTH: .065

3. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .1
   TEXT WIDTH: .1

4. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .155
   TEXT WIDTH: .155

5. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .13
   TEXT WIDTH: .13

6. FONT NAME: NEWS
   HORIZONTAL SPACING: PROPORTIONAL
   TEXT HEIGHT: .25
   TEXT WIDTH: .25

NOTES

A. HEAVY LINES. TYPICAL FOR BORDERS.
B. MEDIUM WEIGHT LINES.
C. NAME AND ADDRESS OF PREPARER:
   A/E CONTRACTOR, IF BY CONTRACT,
   INCLUDE PRINCIPAL'S SIGNATURE AND DATE
   EFD. IF IN-HOUSE
D. ENTER DRAWING TITLE.
E. ENTER DRAWING NUMBERS. USE LETTER
   SIZE 6 OF KEY TO TEXT.
F. ENTER CONSTRUCTION CATEGORY CODE. USE
   LETTER SIZE 3 OF KEY TO TEXT.
G. IF PREPARED AS A SET, ENTER NUMBERS.
   IF A SINGLE DRAWING, ENTER 1 OF 1.
H. PLACE GRAPHIC SCALES HERE.
J. ENTER "AS NOTED" OR THE SCALE IF ONLY
   ONE SCALE IS USED.
K. USE BOX IF THERE IS A MAJOR CLAIMANT.
   LABEL NAME BELOW LINE.
L. USE NOTE IF THERE IS A FORMER DRAWING.
   FILL IN FORMER NUMBER, USING LETTER
   SIZE 3 OF KEY TO TEXT.
M. PLACE SEAL HERE.
N. SHOW NAME OF PREPARING ACTIVITY, USING
   LETTER SIZE 1 OF KEY TO TEXT.
P. ENTER D.
Q. ENTER CONSTRUCTION CONTRACT NUMBER.
R. ENTER NAVFAC STANDARD SPECIFICATION
   NUMBER.

Figure 9 (Continued)
Standard Drawing Vertical Title Block Guidance

Section 7: PREPARING STANDARD SPECIFICATIONS

7.1 Policy. Standard specifications are project-type specifications that complement standard designs and, when supplemented by additional drawings and specification sections, become the contract documents for a project involving specialized structures. Normally, standard specification sections cover the special requirements of the structure, and NAVFAC Guide Specifications are used for the conventional requirements. See NAVFAC DM-6.02, Guide Specifications Handbook, for a more detailed treatment of NAVFACENGCOM specifications. See NFSS-M21 for a sample standard specification.

7.1.1 Coordination of Drawings and Specifications. 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.

7.1.2 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 the 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.

7.1.3 "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 adequately be 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 quality of nonlisted products will be determined.

7.1.4 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 and 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.

7.1.5 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. Submit standard specifications containing experience or warranty clauses to a Level I Contracting Officer for review and approval during each update.

7.2 Use of Guide Specifications. Usually, a project specification section for a project based on a standard design is prepared by using the standard specification sections and the appropriate guide specifications listed in General Notes of the Standard Specification, 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, 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 STANDARD 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 specification. Do not combine work covered by various NAVFAC Guide Specifications into one section unless the work to be covered is of a minor nature.

7.3 Work Not Covered by Guide Specifications. If a NAVFAC Guide Specification is not available for a particular item of work, prepare a suitable section using the most recent NAVFAC Guide Specification format.

7.4 Organization and Content. The following is an outline description of the organization and content for a Standard Specification. For an example, refer to NFSS-M21.

7.4.1 Organization.

GENERAL NOTES.

a) Paragraph 1. STANDARD SPECIFICATION SECTIONS. (Standard Paragraph.)

Section Number	Title
XXXXX	Unique Technical Sections

b) Paragraph 2. APPLICABLE NFGS. (Standard Paragraph)

Section Number	Title
XXXXX	Existing NFGS

c) Paragraph 3. STANDARD DRAWINGS. (Standard Paragraph)

Drawing Number	Title
XXXXXXX	Standard Drawings

d) Paragraph 4. REFERENCED PUBLICATIONS. (Standard Paragraph)

TECHNICAL NOTES.

a) Paragraph A. (Standard Paragraph)

b) Paragraph B. Guide Specification XXXXX, "Title".
Under paragraph "Title" add the following paragraph:
"Text to be added unnumbered"

c) Paragraph C. Guide Specification YYYYY, "Title".
Under paragraph "Title" add the following paragraph:
"Text to be added unnumbered"

Note: Include as many entries as required.

Following the last entry, starting on a new page, provide the complete text of the unique technical sections listed under the paragraph titled "Standard Specification Sections."

7.4.2 Content.

a) Paragraph 1. Standard Specification Sections.

(1) Provide a list of the unique technical sections contained in the Standard Specification. List section numbers and titles.

(2) Request section numbers for titles listed from NAVFACENGCOM Code DS02.

(3) Introduce the list with the following standard paragraph:

"1. STANDARD SPECIFICATION SECTIONS. The Standard Specification Sections listed below become part of the project specification together with the addition of other required sections prepared from NAVFAC Guide Specifications listed in NAVFAC P-34. The Standard Specification Sections are included herein and shall not be edited, changed, or modified unless specific authorization is obtained from NAVFACENGCOM Code 04."

b) Paragraph 2. Applicable NFGS.

(1) Provide a list of all technical sections that would be required in a project using the standard designs. List section numbers and titles. Refer to NAVFAC P-34.

(2) Review each NFGS represented by the sections listed to determine that, when edited for the project, all work, material, equipment, requirements, etc., shown on the standard designs is covered in the particular NFGS. Subject material similar in nature but not covered in the NFGS shall be addressed under a paragraph titled Technical Notes.

(3) Introduce the list with the following standard paragraph:

"2. APPLICABLE NFGS. The following NAVFAC Guide Specifications are applicable to [type] construction and shall be included in the project specification. The appropriate Guide Specifications listed in NAVFAC P-34 shall be edited to suit the project requirements and included in the project specification as necessary. Information specified in the Technical Notes of this Standard Specification shall be incorporated into the current edition of the Specification indicated, and the sections prepared from these Guide Specifications shall be included in the project specification."

c) Paragraph 3. Standard Drawings.

(1) Provide a list of the standard drawings. List drawing numbers and titles.

(2) Request standard drawing numbers from NAVFACENGCOM Code DS02.

(3) Introduce the list with the following standard paragraph:

"3. STANDARD DRAWINGS. The below listed drawings forming a part of this specification are STANDARD DRAWINGS and shall not be changed in any respect. This list shall be edited to suit a specific project and incorporated in Section NFGS-01011, General Paragraphs. All modifications necessary to suit a specific project shall be shown on new drawings prepared for that purpose."

d) Paragraph 4. Referenced Publications. Include the following standard paragraph:

"4. REFERENCED PUBLICATIONS. The listed designations for publications referenced in this standard specification are those that were in effect when this standard specification was prepared, and the current edition shall be listed in the project specification under the appropriate section. Designations that are known to be out of date when project specifications are prepared should be changed to those current at that time, and the nomenclature, types, grades, classes, etc., referenced in this standard specification should be checked for conformance to the latest revision or amendment. The current issues of NAVFAC P-34, ENGINEERING AND DESIGN CRITERIA FOR NAVY FACILITIES, the DEPARTMENT OF DEFENSE INDEX OF SPECIFICATIONS AND STANDARDS, and other applicable publication indexes should be consulted before listing specifications and standards in the project specifications."

e) Technical Notes.

(1) Provide additions and modifications to specific NFGSs that will be included in the project specification at the time the NFGS is edited for the project.

(2) Address subject material unique to the standard design that is not covered in the particular NFGS, but that is similar in nature to the NFGS's subject material.

(3) Introduce the information with the following standard paragraph:

"A. The following items, materials, equipment, requirements, etc., are unique for this construction and are not currently included in the NAVFAC Guide Specifications. The information shall be added without editing, except as specified herein, to the Guide Specifications indicated. The Guide Specifications shall be edited to reflect the project requirements and the sections prepared from these Guide Specifications shall be included in the project specification. Use the Guide Specifications current at the time the project specification is being prepared.

f) Following the Technical Notes, provide the complete text for each standard specification section contained in the standard specification. These sections shall:

(1) Cover unique subject material shown on the standard drawings but not covered in an existing NFGS.

(2) Be prepared in the three-part CSI format similar to a NFGS but will not require editing.

(3) Have no general or Technical Notes.

(4) Be used in a project specification "as is."

g) Do not include edited NFGS. NFGS covering work shown on the standard drawings will be edited by the Project Designer to suit each project. Work similar in nature to that covered in an existing NFGS should not be placed in a standard specification section, but should be addressed under a paragraph titled Technical Notes for inclusion in the project specification at the time the particular NFGS is being edited for each project.

7.5 Format. Edit draft material prior to final typing to reduce unnecessary words, phrases, and paragraphs. Final typing of standard specifications shall be single-spaced on one side of 8-1/2- by 11-inch white bond paper. When standard specifications are reproduced for distribution, the specifications are printed on one side of 8-1/2- by 11-inch sheets.

a) Page Layout. Each page shall have a minimum 1-1/4-inch-wide margin on the left side, a 1-inch margin on the right 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).

b) Section Format.

(1) 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.

(2) Paragraph Numbering. The text of the section begins with Part 1 - General and the first paragraph, numbered 1.1. Subsequent paragraphs are to be consecutively numbered 1.2, 1.3, 1.4, etc. Subparagraphs are to be 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; or 1.2.1.1, 1.2.1.2, 1.2.1.3, etc.

(3) Footing and Paging. The pages containing notes on the use of the specification shall be numbered 1/2 inch above the bottom of each page, centered, starting with "1." On the first page of the first standard specification section and all subsequent pages, the standard 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 number so that 1/2 inch of clearance remains at the bottom of the page.

Example: NFSS X18
15609-1

Two lines below the last paragraph of each section, center the phrase END OF SECTION. Place the note, THIS SHEET SHALL NOT FORM A PART OF BIDDING OR CONTRACT DOCUMENTS. REMOVE THIS SHEET BEFORE ISSUING TO BIDDERS OR CONSTRUCTION CONTRACTORS." at the top and bottom of each page of notes on the use of the specification.

(4) Section Arrangement. Each technical section follows the Construction Specification Institute (CSI)-recommended section format. The first part includes requirements of a general nature. The second part addresses the products or quality of materials and equipment to be incorporated into the work. The third part includes the execution with detailed requirements for performance of the work.

(5) Sentence Construction. The simple imperative mood should be used to effect an economy in words. This style is used for instructions covering the 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."

7.6 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 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 of the typed text. They should contain the same numbering and identification data required for typed pages and should be cross-referenced in the technical paragraphs. Sketches must have NAVFACENGCOM approval prior to inclusion in the specifications.

7.7 Referenced Specifications. The majority of materials and equipment are covered by adequate specifications, which must be referenced appropriately in the standard specifications. NAVFAC P-34, Engineering and Design Criteria for Navy Facilities, lists specifications that are referenced frequently in NAVFAC 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.

7.8 General Rules for References. Certain kinds of specifications form basic references for standard 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 standard specification only 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 referred to in Parts I, II, or III of the standard specification's sections in other than the applicable publications paragraphs, the applicable or nonapplicable portions shall be identified (whichever is more appropriate), when there might be 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 standard specification and the reference should be omitted.

7.9 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., % does 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, may type an improper symbol. Feet (′), 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, "ten buildings," "100 feet long"; however, "one" and "zero," 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.

7.10 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 his responsibility to divide up the work. The project specification should refer only to the contractor and to the Contracting Officer.

7.11 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 are errors that occur frequently.

a) When describing the extent of work, do not say "the work consists of." Say "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." The clause titled Additional Definitions of the General Provisions 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 as represented by the Contracting Officer, and (b) the contractor. Therefore, do not use such expressions as "subject to the approval of the architect," or "when in the opinion of the architect," or "this contractor", or "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 it is necessary to refer to a particular paragraph, do so by its title and the section title under which it is to be found. Cross references like 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." Remember that the Government is responsible to furnish accurate and sufficient information to bidders or contractors, and the A/E, in turn, is responsible to furnish to the Government accurate and sufficient information.

h) The standard Government warranty is covered in the General Provisions 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 two words "and" and "or" in this sentence results in an entirely different meaning. The term "and/or" has no legal meaning. It is contractually unenforceable and shall be avoided.

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

Examples:

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

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

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

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

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

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

(5) The word "provide" is defined by the clause titled Additional Definitions of the General Provisions as "furnish and install." When material and equipment are funished 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.

7.12 Distribution. NAVFACENGCOM Code DS02 will distribute specifications in accordance with Table 1.

Section 8: COORDINATION

8.1 Coordination Policy. NAVFACENGCOM policy is to coordinate all criteria prior to release for publication. The preparing activity (PA) shall coordinate definitive and standard designs and standard specifications when created, revised, or cancelled. This section addresses new or revised criteria. See Section 4 for criteria cancellation procedures. In coordinating the criteria, specify the time limit for responding. The maximum time is 60 days.

8.2 Purpose. The purpose of the coordination phase is to gain input from the widest possible spectrum of qualified experts. The product resulting from this action is a consensus document that is useful to the largest number of people in the engineering, design, and construction of facilities.

8.3 Reviewers. The following activities are standard distribution for the coordination of each definitive or standard design:

a) All Engineering Field Divisions (Code 406);
b) Naval Construction Battalion Center (CBC Port Hueneme Code 156);
c) Officer-in-Charge of Construction (OICC Trident 041E1);
d) NAVFACENGCOM Code DS02 (6 copies) will coordinate with NAVFACENGCOM Headquarters, the Army Corps of Engineers, and the Air Force;
e) Naval Civil Engineering Laboratory (NCEL L53);
f) Naval Energy and Environmental Support Activity (NEESA 111A);
g) Naval Regional Medical Command.

Coordination with g) above shall be with the medical command in the preparing activity's region; i.e., the Northeast Region, National Capital Region, Mid-Atlantic Region, Northwest Region, Southwest Region, or Pacific Region, as follows:

Northern Division:	Northeast Region;
Chesapeake Division:	National Capital Region;
Atlantic Division:	National Capital Region;
Headquarters:	National Capital Region;
Southern Division:	Mid-Atlantic Region;
Western Division:	Northwest Region;
Pacific Division:	Pacific Region;
NCEL:	Southwest Region;
NEESA:	Southwest Region;
CBC Pt. Hueneme:	Southwest Region;

In addition, the criteria may be coordinated with others at the discretion of the PA. Included are major claimant activities identified by NAVFACENGCOM Code DS02.

8.4 Comments.

8.4.1 Deadline. Submit comments on or before the date stipulated in the forwarding letter.

8.4.2 Instructions to Reviewing Activities. Submit all comments to the PA on magnetic media; one ASCII-code-readable, 5 1/4-inch (130-mm), 360Kb, double sided, double-density diskette of the text, such as Volkswriter or WordPerfect format, using the coordination comment glossary described in Appendix B. In making comments, consider the following:

a) Define specific problems and recommend solutions to the problem. Do not make general or vague criticisms.

b) Handle drawings, sketches, and artwork, if any, in the same manner as text. Identify a problem by quadrant rather than paragraph number.

c) Classify each comment as either "essential" or "suggested."

d) Editorial comments are not required; however, if you consider one serious enough to be classified as essential, offer it.

8.4.3 Suggested Comment. A suggested comment covers changes considered desirable but not absolutely necessary. Suggested comments may be accepted or rejected by the PA without justification or explanation; however, the PA should advise the person making the comments(s) of its disposition, as a matter of courtesy.

8.4.4 Essential Comment. An essential comment covers requirements or provisions that must be adopted or reconciled if the document is to be usable to the commenting activity. All comments on the criteria from NAVFACENGCOM Code DS02 are essential comments. Resolve essential comments to the satisfaction of the PA and the reviewing activity. If this cannot be accomplished, follow the procedures stated in Paragraph 8.4.5.

8.4.5 Resolution. Resolution of comments is defined as reviewing comments offered on a particular point and developing a rational, professional decision on a course of action or a solution consistent with the comment, technical requirements, and policy.

NAVFACENGCOM Code DS02, with advice from appropriate NAVFACENGCOM technical experts and consultants, will make a final decision on the disposition of all unresolved essential comments. This action should occur rarely, if ever. Preparing activities have the primary responsibility of settling disparities. If necessary for NAVFACENGCOM Code DS02 to become involved, send a request for such resolution to NAVFACENGCOM Code DS02 immediately after the coordination review phase.

NAVFACENGCOM Code DS02 will accomplish resolution within 30 days of the receipt of request and immediately inform the PA of such resolution.

APPENDIX A
SAMPLE SCOPE OF WORK FOR DEFINITIVE OR STANDARD DESIGN DEVELOPMENT

Information in brackets to be edited to reflect information appropriate to criteria being developed or revised.

PREPARATION OF A [NAVFAC DEFINITIVE DESIGN FOR AN ADMINISTRATION BUILDING]

SCOPE OF WORK

I. GENERAL REQUIREMENTS

A. PROJECT DEFINITION

1. This project consists of all work necessary to develop a [NAVFAC Definitive Design for an Administration Building]. It will serve as planning and design guidance to professional facility planners and architects/engineers. The guidance will be used for individual project planning, for preparing engineering documentation, and for preparing contractual documents for construction.

2. The current definitive design for [an administration building is obsolete because it does not accommodate current technology for an automated office].

3. The Government will negotiate a fixed-price fee for all work contained in Phases A through D.

B. ADMINISTRATIVE PROCEDURES AND INSTRUCTIONS

1. The work will be administered by the [preparing activity], Naval Facilities Engineering Command. All instruction to the Contractor will be by the Commanding Officer. In the routine administration of the contract, such direction will be through the [Engineer-in-Charge (EIC)/Architect-in-Charge (AIC)].

2. The definitive design shall be accomplished in accordance with the criteria listed herein and all other applicable criteria. The work shall be in accordance with the submission requirements and schedule as stated herein.

3. [As soon as possible] after award of this contract, a conference will be held, at which time the Contractor will be given the opportunity to ask pertinent questions involving procedures for the preparation of the design. Additional conferences may be scheduled as necessary.

4. The Contractor shall submit monthly reports on the progress of the project. Reports shall include the percentage of completion; problems encountered, if any; and a current status of the submission schedule.

5. All correspondence, excluding invoices, shall be addressed to the Commanding Officer [preparing activity and address], with [two] extra copies. Invoices shall be sent to the attention of [Code 04] with [four] extra copies.

6. The Contractor shall prepare conference reports of all conferences and telephone instructions and deliver [three] copies each of such reports to the Commanding Officer, [preparing activity,] Naval Facilities Engineering Command, Attention: Code [406/7] within [five] days from the date of such conference or telephone instruction.

7. The contract number shall be used on all reports and correspondence regarding this contract.

8. The Contractor is cautioned that a technically deficient document or a poorly drafted document resulting in illegible copies will require resubmission.

9. Prior to proceeding with the preparation of the final document, a conference will be held for final coordination and resolution of any unsolved problems.

C. CRITERIA

1. The following is a [partial] listing of criteria sources that shall be consulted for this project:

   a. DOD Construction Criteria Manual, DOD 4270.1-M.

   b. Basic Architectural Requirements and Design Considerations, NAVFAC DM-1.01.

   c. [Administrative Facilities, MIL-HDBK-1034.]

   d. Policy and Procedures for Definitive and Standard Designs and Standard Specifications Preparation, MIL-HDBK-1006/4.

   e. Fire Protection for Facilities Engineering, Design, and Construction, MIL-HDBK-1008.

   f. NAVFACENGCOM Index to Engineering and Design Criteria, DM-50

   g. Recommended Practice for the Use of Metric (SI) Units in Building Design and Construction, ASTM E621-79.

2. The Government will provide documents, on a loan basis, to the extent that they are available at the [preparing activity]. The Contractor may purchase other Government publications from any Government Printing Office, including the Washington, D.C., office at 710 North Capitol St., NW., Washington, D.C. 20402.

II. SPECIFIC REQUIREMENTS

A. PROJECT REQUIREMENTS

1. The Contractor shall review and evaluate the current NAVFAC and above-listed criteria relating to [administration buildings] and identify data, criteria, and references to be updated.

2. Visit facilities and locations. Interview facility managers and users. Analyze the actual facilities and the local users' requirements.

3. Develop conceptual sketches for the definitive design. Consider and recommend whether the design could be developed as facility plates in MIL-HDBK-1034 instead of a definitive design.

4. Prepare the definitive design or facility plates. The definitive design or facility plates shall be in accordance with the listed criteria.

5. All coordination review comments shall be processed as described in Section 8: COORDINATION and Appendix B of MIL-HDBK-1006/4, Policy and Procedures for Definitive and Standard Design and Standard Specification Preparation.

6. Required certification (see MIL-HDBK-1006/4, Figure 7).

B. SUBMITTAL PROCEDURES AND REQUIREMENTS.

1. General

   a. The Contractor shall accomplish the work in the various phases as outlined below.

   b. In the event that any submission is unacceptable, resubmissions will be required until an acceptable solution is obtained.

2. Phase A: Preliminary Submission

   a. Prepare a preliminary submission for review.

   b. The preliminary submission will be based on the following project requirements:

(1) Evaluation of present NAVFAC criteria;

(2) Site visits;

(3) Development of conceptual sketches;

(4) Addressing items of health and safety, functional or technical requirements, and the state-of-the-art.

c. Submit [five] copies of each submission element [and present the preliminary submission orally at the preparing activity offices], after which a period of review will follow.

d. Allow 30 days for approval.

e. Upon completion of the review, the Government will return marked-up documents to the Contractor with comments as received from Government reviewers indicating all desired revisions and corrections for incorporation into the next phase of work.

3. Phase B: Coordination Submission

a. Prepare a coordination submission, for which the work should be approximately 90-percent complete.

b. This submission shall be used for formal coordination. The Government will submit the design for coordination review among Government agencies.

c. The coordination submission shall be based on the following further project requirements:

(1) Disposition of prior comments as discussed above.

(2) The development of the design.

d. The coordination submission shall contain the definitive design, 90-percent completed and in final format.

e. Submit [ten] copies of the design in final format.

f. Allow [__] days for Government review.

g. Upon completion of the review, the Government will return marked-up documents to the Contractor with comments indicating desired revisions and corrections for incorporation into the next phase of work.

4. Phase C: 100 Percent Submission

   a. Review all comments received. Resolve all comments and submit the results using the procedure prepare a 100-Percent Submission, in Appendix B of NAVFAC MIL-HDBK-1006/4.

   b. Submit the following:

      (1) Submit [five] copies of the 100-percent design in final format. The draft criteria manual shall be 100-percent complete and in accordance with requirements previously stated herein.

      (2) Submit [three] hard copies and one CPT- and Wang-readable, 8-inch archive diskette of all comments and their resolution, carried out in accordance with MIL-HDBK-1006/4.

      (3) Required certification.

   c. Allow [__] days for Government review.

   d. Upon completion of review, the Government will return marked-up documents to the Contractor with comments indicating desired revisions and corrections for incorporation into the next phase of work.

5. Phase D: Final Submission

   a. Prepare a final submission that contains revised documents, 100-percent complete and camera-ready for printing.

   b. The final submission shall consist of the following:

      (1) One set of reproducible copy (originals) of complete design.

      (2) [One] hard copy and one ASCII-readable, 5 1/4-inch archive diskette of the comments, revised as necessary in response to the 100-percent comments.

   c. The Government will make a final review. In the event that some items are found that had not been corrected, the submission will be returned for correction and resubmission.

   d. Allow [___] days for Government review.

C. SUBMISSION SCHEDULE.

The Contractor shall submit the various phases of work for review as required by this Scope of Work.

APPENDIX B
INSTRUCTIONS FOR USE OF COORDINATION COMMENT GLOSSARY

1. INTRODUCTION. This appendix was developed as an aid for inputting coordination comments to a word processor. The procedure of using the word processor to sort and submit comments on criteria should simplify resolution of comments by preparing activities.

2. GLOSSARY. A word processor glossary has been developed for this comment procedure. This glossary has been transmitted to each preparing activity criteria manager. In addition, the criteria manager has been provided with blank data input sheets to be completed by criteria reviewers. Figure B-1 is a blank data input sheet.

3. UNIFORMITY OF INPUT. Data must be input to the word processor in a uniform manner, to ensure proper sorting. The following is for use by reviewers and word processors.

3.1 Document ID. Cite document identifier (ID) exactly as it appears in coordination review copy.

3.2 Document Title. Cite full title of document as it appears on coordination review copy.

3.3 Date. Date of comments to be entered.

3.4 Preparing Activity. Enter the one letter designation in all capital letters of the preparing activity as follows:

H - designates NAVFACENGCOM Headquarters
N - designates NAVFAC Northern Division
C - designates NAVFAC Chesapeake Division
L - designates NAVFAC Atlantic Division
S - designates NAVFAC Southern Division
W - designates NAVFAC Western Division
P - designates NAVFAC Pacific Division
E - designates Naval Civil Engineering Laboratory
A - designates Naval Energy and Environmental Support Activity
O - designates Other (Army, Air Force, etc.)
X - designates CBC Port Hueneme, CESO 156

3.5 Paragraph Number. Enter paragraph number as it appears on coordination review copy immediately after "period"; do not insert a space.

4. USING THE GLOSSARY. Read all screens before inputting data.

4.1 Attach Glossary. On the word processing menu, use the space bar to get to glossary Functions, Execute. Use the space bar to get to Attach Glossary, Execute. Key in glossary number 2123, Execute. The system will tell you that the attachment is successful. Create a new document. You are now ready to begin.

4.2 Glossary Screens.

4.2.1 Comment Screen. Key in "GL," then "a". The following will appear on the screen:

THIS GLOSSARY IS USED TO FORMAT COMMENTS FOR COORDINATION AFTER DOCUMENT IS COMPLETE IT MAY BE EDITED, HOWEVER, THE FORMAT SHOULD NOT BE ALTERED

AFTER KEYING IN DATA HIT THE "EXEC"
DO NOT ADD RETURNS TO TEXT
DO NOT ADD RETURNS TO TEXT
DO NOT ADD RETURNS TO TEXT
DO NOT ADD RETURNS TO TEXT

Has Document ID and Title been previously entered
PLEASE ENTER YES (Y) OR NO (N)

If (N)o is entered, the next screen asks a series of questions in order as follows. After responding to each question, hit the EXECUTE key.

DOCUMENT ID, enter document identifier
DOCUMENT TITLE (FULL), enter the complete title of document
DATE, enter the date when the data was entered in the glossary
PREPARING ACTIVITY, enter preparing activity of document
REVIEW ACTIVITY, enter activity and code
PAGE, enter page on which there is a comment
PARAGRAPH NO, enter the paragraph number from the text of the document
PROBLEM, enter the problem, succinctly stated
RECOMMENDED SOLUTION, the screen will ask:

IS RECOMMENDED SOLUTION ESSENTIAL (E) OR SUGGESTED (S)
PLEASE ENTER (E) OR (S)

Key in the proposed solution to the problem and hit EXECUTE.

You are now finished with the entered first comment.

If (Y)es is entered, the next screen begins with REVIEW ACTIVITY and continues thereafter as above.

The screen asks you:
DO YOU HAVE MORE ENTRIES? PLEASE ENTER YES (Y) OR NO (N)

If (Y)es is entered, proceed with the comments; if (N)o is entered, you are now ready to sort. Sorting may be done before or after resolution of comments, whichever is more efficient for use.

Individual comments can be entered in any order. When all data is entered, the Glossary will sort by paragraph number. There is no limit to the length of the comments that can be entered.

4.2.2 Resolution Screen. To enter resolutions to comments, key in "GL," then the letter "p." The following will appear on the screen:

THIS GLOSSARY IS DESIGNED FOR PREPARING ACTIVITIES TO PREPARE RESOLUTIONS FOR REVIEWING ACTIVITY COMMENTS

*******PLEASE READ ALL OF THE FOLLOWING CAREFULLY BEFORE STARTING******
*******PLEASE READ ALL OF THE FOLLOWING CAREFULLY BEFORE STARTING******

TO START HIT ANY LETTER - this will display the beginning of the document.

ONCE AT THE BEGINNING OF THE DOCUMENT, SELECT COMMENT TO BE RESOLVED BY POSITIONING CURSOR UNDER THE PARAGRAPH NO THEN HITTING THE "GL" KEY, THEN THE LETTER "r"

TO START PRESS ANY LETTER

Screen asks in upper-right corner "find Par No." When a paragraph is selected and "EXECUTE" is hit, the screen will display the paragraph number selected and will ask the following:

CORRECT PARAGRAPH SELECTED?
PLEASE ENTER YES (Y) OR NO (N)

If (Y)es entered, the screen will ask the following:

PLEASE ENTER NUMBER FOR
PREPARING ACTIVITY RESOLUTION

1/--ACCEPT
2/--ACCEPT, AS MODIFIED BELOW
3/--REJECTED
PLEASE ENTER (1, 2, or 3)

If "1" is selected, the screen will show:

RESOLUTION

REVIEW ACTIVITY COMMENTS ACCEPTED

If "2" is selected, the screen will ask:

PLEASE ENTER MODIFICATIONS THEN HIT THE EXEC KEY

The screen will show:

RESOLUTION

COMMENTS ACCEPTED AS MODIFIED

If "3" is selected, the screen will ask:

PLEASE ENTER REASON/S FOR REJECTION THEN HIT THE EXEC KEY

The screen will show:

RESOLUTION

COMMENTS REJECTED FOR THE FOLLOWING REASON(S)

If an incorrect paragraph is selected and (N)o is entered, the screen will ask you in the upper-left corner to "SEL PAR/ GL r". Select the correct paragraph number and proceed as above.

4.3 Sorting of Input. To sort the document, hit the "GL" key, then the letter "s." This will sort the document by paragraph number, so that all comments/resolutions pertaining to a particular paragraph will be grouped together. This sort may be used prior to resolution, which will assist the preparer in the resolution process, as all comments made on the criteria manual will be together for comparison. A printout of this sort may be provided to the preparer on which he can write in his resolution and give it back to the word processor to enter the resolution.

4.4 Submission. Provide the criteria manager with a final printout of all comments and resolutions (hard-copy) as well as a ASCII-readable diskette of this information.

DOCUMENT ID
DOCUMENT TITLE (FULL)
DATE
PREPARING ACTIVITY
****
REVIEW ACTIVITY
PAGE OR SHEET
PARAGRAPH NO.OR DRAWING TITLE
PROBLEM:

RECOMMENDED SOLUTION:

RESOLUTION

****
REVIEW ACTIVITY
PAGE OR SHEET
PARAGRAPH NO.OR DRAWING TITLE
PROBLEM:

RECOMMENDED SOLUTION:

RESOLUTION

****

Figure B-1
Blank Data Input Sheet

REFERENCES

American Civil Engineering Practice, Vol. I, R.W. Abbett, John Wiley and Sons, Inc., P.O. Box 063, Somerset, NJ 08873.

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	Dimensioning and Tolerancing for Engineering Drawings.
ANSI Y32.9-1972	Graphic Symbols for Electric Wiring and Layout Diagrams Used in Architecture and Building Construction.

Architectural Graphic Standards, Ramsey and Sleeper, Seventh Edition, John Wiley and Sons, Inc., Dep. 7-8533, P.O. Box 063, Somerset, NJ 08873-9977.

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

DOD 4120.3-M	Defense Standardization and Specification Programs, Policies, Procedures and Instructions Manual
DOD 4270.1-M	Construction Criteria Manual
DODISS	Index of Specifications and Standards

Department of the Navy, Chief of Naval Operations, Washington, DC 20350.

OPNAVINST 5100.23.	Navy Occupational Safety and Health Program Manual
OPNAVINST 5100.24.	Navy System Safety Engineering and Management

Engineering and Design Criteria for Navy Facilities, NAVFAC P-34, available from Naval Construction Battalion Center (Code 156), Port Hueneme, CA 93043.

Federal Acquisition Regulations (FARs), Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Masterformat - Master List of Section Titles and Numbers, CSI-MP-2-1-83, The 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-17	Mechanical Symbols
MIL-STD-18	Structural Symbols
MIL-HDBK-1008	Fire Protection for Facilities
MIL-D-5480	Data, Engineering and Technical, Reproduction Requirements for

NAVFAC Criteria Manuals and P-Publications, available from Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120. Copies of Definitive Designs (DDs) can be obtained from any Engineering Field Division Office.

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 Installations.
DM-1.01	Basic Architectural Requirements and Design Considerations.
DM-6.02	Guide Specifications Handbook.
MIL-HDBK-1006/3	Requirements for Engineering and Design Criteria Manual Preparation.
NFSS-M21	Earth Covered Circular Composite Arch Magazine.
SD-1404375 through SD-1404389	Earth Covered Circular Composite Arch Magazine.

Publication Security Review And Clearance Form, NAVFAC 5720/6 (Rev 10-81), available from NAVFACENGCOM (Code DS02), 200 Stovall Street, Alexandria, VA 22332-2300.

Three-Part Section Format for Construction Specifications, CSI-MP-2-2, The Construction Specifications Institute, 601 Madison Street, Alexandria, VA 22314.

GLOSSARY

Active Voice. A sentence is in active voice when the subject performs the actions expressed by the verb instead of being acted upon; e.g., "[You (subject)] state what information must be reviewed."

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

Cancellation. Removing criteria from use by notifying all recipients of criteria that it is cancelled, destroying all stock, and deleting subject entries in P-34 and ECMS, and references in other publications when such publications are revised.

Criteria. Criteria manuals, guide specifications, definitive designs, standard designs, standard specifications, 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 water, wastewater removal.

Functional Requirements. Requirements necessary to ensure that a particular facility provides 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.

Revision. Completing all engineering and administrative work necessary for a particular criteria item to ensure that it provides current facilities technology and functional and procedural requirements guidance.

Scope of Work. A description of all services required of the preparer of criteria.

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

Validation. Providing an in-depth technical review of criteria, determining that it is current with the state-of-the-art and meets the function for which it was intended, and certifying it as valid for up to 3 years.

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