

**NOT MEASUREMENT  
SENSITIVE**

**MIL-STD-100G**

**9 JUNE 1997**

**SUPERSEDING**

**MIL-STD-100F**

**9 SEPTEMBER 1996**

**DEPARTMENT OF DEFENSE  
STANDARD PRACTICE  
FOR  
ENGINEERING DRAWINGS**



AMSC N/A

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AREA DRPR

## MIL-STD-100G

**FOREWORD**

1. This Military Standard is approved for use by all Departments and Agencies of the Department of Defense (DoD).

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, U.S. Army Armament Research, Development and Engineering Center, ATTN: AMSTA-AR-EDE-S, Picatinny Arsenal, NJ 07806-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

3. The preferred standard for Engineering Drawing Practices is ASME Y14.100M. The contractual application of MIL-STD-100 is permissible provided one or both of the following conditions exist:

- it is required and fully justifiable that a DoD activity be the design activity
- the applicable end item requires Government logistics support

4. This Military Standard provides:

a. Standard practices for the preparation of engineering drawings, drawing format and media for delivery.

b. Requirements for drawings derived from or maintained by Computer Aided Design (CAD).

c. Procedures for the creation of titles for engineering drawings.

d. Numbering, coding and identification procedures for engineering drawings, associated lists and documents referenced on these engineering drawings and associated lists.

e. Locations for Marking on engineering drawings.

5. The policy of the DoD is to utilize to the maximum degree possible those non-Government standards which satisfy the needs of the military. Accordingly, this standard will be revised periodically to take advantage of those non-Government standards which meet the DoD criterion for technical sufficiency.

**Similarly, and in keeping with the DoD practice of adopting non-Government standards whenever practicable, Chapters 600 and 700, as contained in previous versions of MIL-STD-100, have been entirely replaced by ASME Y14.35M and ASME Y14.34M respectively, and Chapter 200 is largely based on ASME Y14.24M. An accurate perception of DoD Engineering Drawing Practices therefore necessitates user recognition of MIL-STD-100G, ASME Y14.24M, ASME Y14.34M, ASME Y14.35M, and ASME Y14.100M as being a composite set.**

6. Fundamental to the current content and maintenance of MIL-STD-100 is the existence of the DOD/Industry Drawing Practices Group (DRPRG). The DRPRG is chartered under the Defense Standardization Program as a cooperative effort between DOD and Industry directed toward codifying and standardizing engineering documentation practices, promoting applicable non-Government standards, and fostering liaison between industry associations and Government

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agencies. The DRPRG addresses the entire range of issues from the current status and needed changes to MIL-STD-100, to electronic data storage and transmission, and the ongoing requirement for compatibility with initiatives associated with Continuous Acquisition and Life Cycle Support (CALS).

7. The DRPRG is chaired by the DOD Lead Standardization Activity (LSA) for DRPR and is co-chaired by an industry association member. The Office of the Assistant Secretary of Defense for Production and Logistics provides management oversight through its representative who serves as Executive Liaison. The DRPRG meets three or four times a year to address issues brought before it. For more information on the DRPRG and its proceedings please contact the DRPR LSA, located at the address indicated above for beneficial comments.

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### 1. SCOPE

**1.1 Scope.** This standard, along with ASME Y14.100M, establishes the essential requirements and reference documents applicable to the preparation and revision of engineering drawings and associated lists for or by Departments and Agencies of the Department of Defense. ASME Y14.100M is the preferred requirements document for engineering drawing practices. This standard should only be used in lieu of ASME Y14.100M where the necessity for a DoD design activity is fully justified and Government logistics support is required . See 6.2.2.

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**2. APPLICABLE DOCUMENTS****2.1 Government documents.**

**2.1.1 Specifications, standards, and handbooks.** The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

**SPECIFICATIONS****FEDERAL**

A-A-2946	Paper, Tracing
L-F-340	Film, Diazotype, Sensitized, Moist and Dry Process, Roll and Sheet
L-P-519	Plastic Sheet, Tracing, Glazed, and Matte Finish

**DEPARTMENT OF DEFENSE**

MIL-D-5480	Data, Engineering and Technical, Reproduction Requirements for
MIL-PRF-28000	Digital Representation for Communication of Product Data: IGES Application Subsets
MIL-PRF-28001	Markup Requirements and Generic Style Specification For Electronic Printed Output and Exchange of Text
MIL-PRF-28002	Raster Graphics Representation in Binary Format, Requirements for
MIL-DTL-31000	Technical Data Packages, General Specification for

**STANDARDS****MILITARY**

MIL-STD-25	Ship Structural Symbols for Use on Ship Drawings
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-130	Identification Marking of U.S. Military Property

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MIL-STD-196	Joint Electronics Type Designation System
MIL-STD-280	Definitions of Item Levels, Item Exchangeability, Models, and Related Terms
MIL-STD-882	System Safety Program Requirements
MIL-STD-883	Test Methods and Procedures for Microelectronics
MIL-STD-961	Defense Specification Practices
MIL-STD-962	Defense Standards and Handbooks, and Bulletins, Preparation of
MIL-STD-973	Configuration Management
MIL-STD-1285	Marking of Electrical and Electronic
MIL-STD-1306	Fluerics, Terminology and Symbols
MIL-STD-1388-1	Logistics Support Analysis
MIL-STD-1464	Army Nomenclature System
MIL-STD-1661	Mark and Mod Nomenclature System
MIL-STD-1686	Electrostatic Discharge Control Program for Protection of Electrical Equipment (Excluding Electrically Initiated Explosive Devices)
MIL-STD-1812	Type Designation, Assignment and Method for Obtaining
MIL-STD-1840	Automated Interchange of Technical Information
MIL-STD-2118	Flexible and Rigid-Flex Printed Wiring for Electronics Equipment, Design Requirements for

**HANDBOOKS****MILITARY**

MIL-HDBK-263	Electrostatic Discharge Control Handbook for Protection of Electrical and Electronic Parts,
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	Assemblies and Equipment (Excluding Electrically Initiated Explosives Devices) Metric
MIL-HDBK-780	Standard Microcircuit Drawings
MIL-HDBK-2164	Environmental Stress Screening for Electronic Equipment

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Bldg 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

**2.1.2 Other Government documents, drawings and publications.** The following other Government documents, drawings and publications form a part of this standard to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DoD Cataloging Handbook H4/H8	Commercial and Government Entity (CAGE) Cataloging Handbook
DoD Cataloging Handbook H6	Federal Item Name Directory for Supply Cataloging
DoDISS	Department of Defense Index of Specifications and Standards
DoD Directive 5230.24	Distribution Statements on Technical Documents

(Copies of Cataloging Handbooks H4/H8, and H6 are available from the Commander, Defense Logistics Services Center, Battle Creek, MI 49017-3084. Copies of DoDISS are available on a yearly subscription basis either from the Government Printing Office for hard copy or 1/2 inch magnetic tape is available from the DoDSSP, Standardization Documents Order Desk, Bldg 4D, 700 Robbins Avenue, Philadelphia, PA 19120-5099. Application for copies of DoD Directive 5230.24 should be addressed to the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402-0001)

**2.2 Non-Government publications.** The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).



## MIL-STD-100G

### **AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)**

ASME Y1.1	Abbreviations for Use on Drawings and in Text
ASME Y14.24M	Types and Applications of Engineering Drawings
ASME Y14.34M	Parts Lists, Data Lists and Index Lists
ASME Y14.35M	Revision of Engineering Drawings and Associated Documents
ASME Y14.100M	Engineering Drawing Practices

### **INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)**

ANSI/IEEE Std 200	Reference Designations for Electrical and Electronic Parts and Equipment
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### **INSTITUTE FOR INTERCONNECTING AND PACKAGING ELECTRONIC CIRCUITS (IPC)**

ANSI/IPC-D-275	Design Standards for Rigid Printed Board and Rigid Board Assemblies
ANSI/IPC-FC-250	Specification for Single and Double Sided Flexible Printed Wiring
ANSI/IPC-T-50	Terms and Definitions for Interconnecting and Packaging Electronic Circuits

Copies of DoD adopted non-Government Standards are available to Military activities through the DoD Single Stock Point, Standardization Documents Order Desk, Bldg 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094. Military activities may obtain copies of non-DoD adopted documents from the sponsoring Industry Association. Non-military activities may obtain copies of non-Government standards and publications from the sponsoring Industry organization as follows:

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

(ASME) American Society of Mechanical Engineers  
22 Law Drive  
Fairfield, NJ 07007-2300

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(IEEE) The Institute of Electrical and Electronics Engineers,  
Incorporated  
345 East 47th Street  
New York, NY 10017

(IPC) Institute for Interconnecting and Packaging Electronic  
Circuits  
7380 North Lincoln Avenue  
Lincolnwood, IL 60646

**2.3 Order of precedence.** In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

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**3. DEFINITIONS**

**3.1 Acronyms and abbreviations used in this standard.** The acronyms and abbreviations used in this standard are defined as follows:

a. ABCA	AMERICAN BRITISH CANADIAN AUSTRALIAN
b. AP	APPLICATION LIST
c. AR	AS REQUIRED
d. ASCC	AIR STANDARDIZATION COORDINATING COMMITTEE
e. CAD/CAM	COMPUTER AIDED DESIGN/COMPUTER AIDED MANUFACTURING
f. CAGE	COMMERCIAL AND GOVERNMENT ENTITY
g. CAGEC	COMMERCIAL AND GOVERNMENT ENTITY CODE
h. CDA	CURRENT DESIGN ACTIVITY
i. CSI	CRITICAL SAFETY ITEM
j. CSP	CRITICAL SAFETY PROCESS
k. DL	DATA LIST
l. DFARS	DEFENSE FEDERAL ACQUISITION REGULATION SUPPLEMENT
m. DLA	DEFENSE LOGISTICS AGENCY
n. DLSC	DEFENSE LOGISTICS SERVICES CENTER
o. DoD	DEPARTMENT OF DEFENSE
p. DoDISS	DEPARTMENT OF DEFENSE INDEX OF SPECIFICATIONS AND STANDARDS
q. EGD	ELECTRONIC GENERATED DATA
r. ESD -	ELECTROSTATIC DISCHARGE
s. FSCM	FEDERAL SUPPLY CODE FOR MANUFACTURERS
t. GDA	GOVERNMENT DESIGN ACTIVITY
u. HCI	HARDNESS CRITICAL ITEM (NUCLEAR)
v. HCP	HARDNESS CRITICAL PROCESS (NUCLEAR)

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w. IDL	IDENTURED DATA LIST
x. INT	INTERFACE CONTROL
y. IGES	INITIAL GRAPHICS EXCHANGE SPECIFICATION
z. IL	INDEX LIST
aa. MS	MILITARY STANDARD (SHEET FORM)
ab. NSN	NATIONAL STOCK NUMBER
ac. ODA	ORIGINAL DESIGN ACTIVITY
ad. ODC	OZONE DEPLETING CHEMICAL
ae. ODS	OZONE DEPLETING SUBSTANCE
af. OCI	OBSERVABLE CRITICAL ITEM
ag. OCP	OBSERVABLE CRITICAL PROCESS
ah. PIN	PART OR IDENTIFYING NUMBER
ai. PL	PARTS LIST
aj. QSTAG	QUADRIPARTITE STANDARDIZATION AGREEMENT (AMERICAN-BRITISH- CANADIAN-AUSTRALIAN ARMY STANDARDIZATION PROGRAM)
ak. SGML	STANDARDIZED GENERAL MARKUP LANGUAGE
al. SMD	STANDARD MICROCIRCUIT DRAWING
am. STEP	STANDARD FOR THE EXCHANGE OF PRODUCT DATA
an. WL	WIRE LIST

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**3.2 Acceptance .** The act of an authorized representative of the Government by which the Government assumes for itself, or as an agent of another, ownership of existing and identified supplies tendered, or approves specific services rendered, as partial or complete performance of the contract on the part of the contractor.

**3.3 Adopted items.** Items approved for inclusion in the DoD logistics system through assignment of National Stock Number (NSN) by the Defense Logistics Agency (DLA), or recognition by DLA of item Reference Numbers as established by manufacturer's part number, specification or drawing, or trade name (when items are identifiable by trade name only).

**3.4 Altered item.** An altered item is an existing item, under the control of another design activity or defined by a nationally recognized standardization document, that is subjected to physical alteration to meet the design requirements.

**3.5 Approved item name.** An approved item name is a name approved by the Directorate of Cataloging, Defense Logistics Services Center and published in the Cataloging Handbook H6, Federal Item Name Directory for Supply Cataloging.

**3.6 Artwork Master.** An accurately-scaled configuration which is used to produce the Production Master. (ANSI/IPC-T-50)

**3.7 Assembly.** A number of parts or subassemblies or any combination thereof joined together to perform a specific function, and subject to disassembly without degradation of any of the parts. (Examples: power shovel-front, fan assembly, audio-frequency amplifier).

NOTE: The distinction between an assembly and a subassembly is determined by individual application. An assembly in one instance may be a subassembly in another where it forms a portion of a higher assembly.

**3.7.1 Inseparable assembly.** Same as part. See 3.54.

**3.8 Associated list.** A tabulation of pertinent engineering information pertaining to an item depicted on an engineering drawing or on a set of engineering drawings.

**3.9 Bulk items.** Bulk items are those constituents of an assembly or part, such as oil, wax, solder, cement, ink, damping fluid, grease, flux, welding rod, twine or chain, that satisfies one or more of the following criteria:

- a. the quantity required cannot readily be predetermined
- b. the physical nature of the material is such that it is not adaptable to pictorial representation
- c. the finished size is obtainable through use of such tools as shears, pliers or knives, without further machining operation, and the final configuration is such that it can be described in writing without the necessity of pictorial representation.

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**3.10 Code Identification.** See Commercial and Government Entity (CAGE) Code.

**3.11 Commercial and Government Entity (CAGE) Code.** A five character code listed in Cataloging Handbook H4/H8, Commercial and Government Entity (CAGE) Code, which is assigned to commercial and Government activities that manufacture or develop items, or provide services or supplies for the Government. When used with a drawing number or part number, the CAGE Code designates the design activity from whose series the drawing or PIN is assigned. The CAGE Code was previously called manufacturer's code identification number or Federal Supply Code for Manufacturers (FSCM).

**3.12 Commercial item.** A product, material, code, component, sub-system, or system sold or traded to the general public in the course of normal business operations at prices based on established catalog or market prices. (MIL-DTL-31000)

**3.13 Contract.** A mutually binding legal relationship obligating the seller to furnish the supplies or services (including construction) and the buyer to pay for them. It includes all types of commitments that obligate the Government to an expenditure of appropriated funds and that, except as otherwise authorized, are in writing. In addition to bilateral instruments, contracts include, but are not limited to, awards and notices of awards; job orders or task letter issued under basic ordering agreements; letter contracts; orders, such as purchase orders, under which the contract becomes effective by written acceptance or performance; and bilateral contract modifications.

**3.14 Contracting activity.** That Government activity having a legal agreement or order with an individual, partnership, company, corporation, association or other entity for the design, development, manufacture, maintenance, modification, or supply of items or services.

**3.15 Contractor.** An individual, partnership, company, corporation, association or other service having a contract with the Government for the design, development, manufacture, maintenance, modification or supply of items under the terms of a contract. A Government activity performing any or all of the above functions is considered to be a contractor for configuration management purposes. (MIL-STD-973)

**3.16 Copy.** Any reproduction or duplication, in any media, of an original.

**3.17 Critical safety characteristic.** Any feature, such as tolerance, finish, material composition, manufacturing, assembly or inspection process or product, which if nonconforming or missing, could cause the failure or malfunction of the critical safety item.

**3.18 Critical safety item (CSI).** A part, assembly, installation or production system with one or more critical characteristics that, if not conforming to the design data or quality requirements would result in an unsafe condition. Unsafe conditions relate to hazard severity categories I and II of MIL-STD-882, and include conditions which could cause loss or serious damage to the end item or major components, loss of control or serious injury to personnel.

**3.19 Current design activity (CDA).** An activity (Government or contractor) currently having responsibility for the design of an item, and the preparation or maintenance of drawings and

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associated documents. Current design activity could be the original activity or new activity when that responsibility is transferred from another Government or contractor design activity.

**3.20 Department of Defense Index of Specification and Standards (DoDISS).** The DoD publication that lists unclassified Federal and military specifications and standards, related standardization documents, and voluntary standards approved for use by DoD.

**3.21 Design activity.** A design activity is an activity that has, or has had, responsibility for the design of an item. The activity may be Government, commercial, or nonprofit organization. (ASME Y14.24M). See also "current design activity" and "original design activity".

**3.22 Digital data.** Data stored on a computer system which employs a display on which the user and the computer interact to create entities for the production of layouts, drawings, numerical control tapes, or other engineering data.

**3.23 Distribution statement.** A statement used in marking a technical document to denote the extent of its availability for distribution, release, and disclosure without need for additional approvals and authorizations from the controlling DoD office.

**3.24 Document.** Document applies to the specifications, drawings, lists, standards, pamphlets, reports and printed, typewritten or other information, relating to the design, procurement, manufacture, test or acceptance inspection of items or services.

**3.25 Drawing (engineering).** An engineering document or digital data file(s) that discloses (directly or by reference), by means of graphic or textual presentations, or combinations of both, the physical and functional requirements of an item.

**3.26 Drawing format.** The arrangement and organization of information within a drawing. This includes such features as the size and arrangement of blocks, notes, lists, revision information, and use of optional or supplemental blocks.

**3.27 Duplicate original.** A replica of an engineering drawing or digital data file(s) created to serve as the official record of the item when the original has been lost.

**3.28 End-product (end-item).** An end-product is an item, such as an individual part or assembly, in its final or completed state. (ASME Y14.24M)

**3.29 Engineering data.** Engineering documents such as drawings, associated lists, accompanying documents, manufacturer specifications and standards, or other information prepared by a design activity and relating to the design, manufacture, procurement, test or inspection of items.

**3.30 Federal Supply Code for Manufacturers (FSCM).** See Commercial and Government Entity (CAGE) Code.

**3.31 Find number or item number.** A reference number assigned to an item in lieu of the item's identifying number on the field of the drawing and entered as a cross reference to the item number of the parts lists where the item name and identification number are given. Reference designations in accordance with ANSI/IEEE Std 200 may be used as find numbers or item numbers. (ASME Y14.34M).

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**3.32 Government design activity (GDA).** The Government agency responsible, or scheduled to become responsible, for configuration management and design requirements of a configuration item.

**3.33 Group.** A collection of units, assemblies or subassemblies which is a sub-division of a set or system, but which is not capable of performing a complete operational function. (Examples: antenna group, indicator group.)

**3.34 Item.** A non-specific term used to denote any unit or product including materials, parts, assemblies, equipment, accessories and computer software.

**3.35 Item identification.** The combination of the part or identifying number and the original design activity CAGE Code. (NOTE: Not applicable to vendor item control drawings.)

**3.36 Manufacturer.** An individual, company, corporation, firm or Government activity who:

- a. controls the production of an item, or
- b. produces an item from crude or fabricated materials, or
- c. assembles materials or components, with or without modification, into more complex items.

**3.37 Master drawing.** A document that shows the dimensional limits or grid locations applicable to any or all parts of a printed board (rigid or flexible), including the arrangement of conductive and nonconductive patterns or elements, size, type, and location of holes; and any other information necessary to describe the product to be fabricated. (ANSI/IPC-T-50)

**3.38 Matched parts.** Matched parts are those parts, such as special application parts, which are machine or electrically matched, or otherwise mated, and for which replacement as a matched set or pair is essential.

**3.39 Nationally recognized standard.** A specification or standard issued with the intent to establish common technical requirements. Such standards are developed by or for a Government activity or by a non-Government organization (private sector association, organization, or technical society) which conducts professional standardization activities (plans, develops, establishes, or publicly coordinates standards, specifications, handbooks, or related documents) and is not organized for profit. (ASME Y14.24M)

**3.40 National Stock Number (NSN).** A number assigned to each item of supply, that is purchased, stocked or distributed within the Federal Government.

**3.41 Non-Government standard (or document).** A standardization document developed by a private sector association, organization or technical society which plans, develops, establishes or coordinates standards, specifications, handbooks or related documents. Non-Government standards adopted by the DoD are listed in the DoDISS. (MIL-STD-962)

**3.42 Nuclear effects.** In this context, nuclear effects include the effects on assemblies, subassemblies or parts due to nuclear-power sources, space radiation or nuclear-weapon-produced environments.



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**3.43 Nuclear Hardness Critical Item (HCI).** A Nuclear HCI is an item of hardware or software that satisfies one or more of the following conditions:

- a. Functionally required hardware (meaning hardware included in system design to satisfy any requirement other than nuclear hardening) whose response to the specified nuclear environments could cause degradation in system survivability unless additional provisions for hardness are included in the item specification, design, manufacture, item selection process, provisioning, configuration control, etc.
- b. Functionality required hardware or software that inherently provides protection\*\* for the system or any of its elements against the specified nuclear environments, and which if modified, removed or replaced by an alternate design could cause a degradation in system survivability.
- c. Hardness dedicated hardware or software included in the system solely to achieve system nuclear survivability requirements.
- d. Hardware items (at the level of application) to which a Hardness Critical Process (HCP) is applied.
- e. A subassembly or higher level of assembly which contains one or more HCIs.

\*\* (for example, the item was not designed for its nuclear weapon response but has the intrinsic capability to perform adequately in the specified nuclear environments. This definition includes items whose design is modified to provide for nuclear survivability of other items, but not to provide for their own survivability.)

**3.44 Nuclear Hardness Critical Process (HCP).** A Nuclear HCP is any fabrication, manufacturing, assembly, installation, maintenance and repair, or other process or procedure which implements a hardness design feature and satisfies system hardness requirements.

**3.45 Observable Critical Item (OCI).** An OCI is any part or material specifically designed, selected or qualified to meet specified observable requirements.

**3.46 Observable Critical Process (OCP).** An OCP is any fabrication, manufacturing, assembly, installation, maintenance and repair, or other process or procedure which implements an observable design and satisfies observable system requirements.

**3.47 Original.** The current design activity's full size reproducible drawing or digital data file(s) on which is kept the revision record recognized as official.

**3.48 Original date.** A date that establishes the origination of the drawing and is retained throughout the life of the drawing for historical record purposes.

**3.49 Original design activity (ODA).** An activity (Government or contractor) having had responsibility originally for the design of an item and whose drawing number and CAGE Code is shown in the title block of drawings and associated documents.

**3.50 Part.** One piece, or two or more pieces joined together, which are not normally subject to disassembly without destruction or impairment of designed use. (Examples: transistor, composition resistor, screw, gear, transformer, milling cutter) See 3.7.1.

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**3.51 Part or Identifying Number (PIN).** The identifier assigned by the responsible design activity or by the controlling nationally recognized standard which uniquely identifies (relative to that design activity) a specific item. The PIN generally includes the controlling drawing or document number and optional suffix. The PIN does not include the drawing revision identifier, drawing size, or CAGE Code. The term "part or identifying number" replaces the terms "part number" and "bulk material identification number". (ASME Y14.24M and MIL-STD-961)

**3.52 Procuring activity.** A component of a Government agency having a significant acquisition function and designated as such by the head of the agency. Unless agency regulations specify otherwise, the term "procuring activity" shall be synonymous with "contracting activity."

**3.53 Product.** Includes materials, parts, components, subassemblies, assemblies, and equipments. The term product wherever used in this document shall also encompass a family of products. A family of products is defined as all products of the same classification, design, construction, material, type, etc., produced with the same production facilities, processes, and quality of material, under the same management and quality controls, but having the acceptable variety of physical and functional characteristics defined and specified in the applicable engineering documentation.

**3.54 Product definition data.** Denotes the totality of data elements required to completely define a product. Product definition data includes geometry, topology, relationships, tolerances, attributes and features necessary to completely define a component part or an assembly of parts for the purpose of design, analysis, manufacture, test and inspection. (MIL-PRF-28000).

**3.55 Production master.** A 1 to 1 scale pattern which is used to produce one or more printed boards (rigid or flexible) within the accuracy specified on the Master Drawing. (ANSI/IPC-T-50).

**3.56 Qualification.** The formal process by which a manufacturer's product is examined for compliance with the requirements of a source control drawing for the purpose of approving the manufacturer as a source of supply. (ASME Y14.24M).

**3.57 Quality assurance.** A planned and systematic pattern of all actions necessary to provide adequate confidence that management and technical planning and controls are adequate to:

- a. Establish correct technical requirements for design and manufacturing.
- b. Create products and services that conform to the established technical requirements.

**3.58 Referenced documents.** Design activity standards, drawings, specifications, or other documents referenced on drawings or lists.

**3.59 Repair parts.** Those support items that are an integral part of the end item or system which are coded as non-repairable. (MIL-STD-1388-1)

**3.60 Repairable.** Having the capability of being repaired.

**3.61 Replacement drawing.** A replacement drawing is a new original drawing substituted for the previous original drawing of the same drawing number.

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**3.62 Selected item.** A selected item is an existing item, under the control of another design activity or defined by a nationally recognized standardization document, that is subjected to refined acceptance criteria (such as fit, tolerance, performance, or reliability) to meet design requirements.

**3.63 Set.** A unit or units and necessary assemblies, subassemblies and parts connected or associated together to perform an operational function. (Examples: radio receiving set; sound measuring set, which includes parts assemblies and units such as cable, microphone and measuring instruments; radar homing set) Set is also used to denote a collection of like parts such as a tool-set or a set of tires.

**3.64 Specification.** A document prepared to support acquisition that describes essential technical requirements for materiel and the criteria for determining whether those requirements are met. (MIL-STD-961).

**3.65 Standard.** A document that establishes uniform engineering or technical criteria, methods, processes, and practices. (MIL-STD-962).

**3.66 Standardization document.** A document developed by the Government or private sector association, organization, or technical society which plans, develops, establishes or coordinates standards, specifications, handbooks, or similar documents for the purpose of standardizing items, materials, processes, or procedures.

**3.67 Standard, company.** A company document which establishes engineering and technical limitations and applications for items, materials, processes, methods, designs and engineering practices unique to that company. (MIL-DTL-31000).

**3.68 Subassembly.** Two or more parts which form a portion of an assembly or a unit replaceable as a whole, but having a part or parts which are individually replaceable. (Examples: gun mount stand, window sash, recoil mechanism, floating piston, telephone dial, Intermediate Frequency (IF) strip, terminal board with mounted parts.) (MIL-STD-280)

**3.69 Supplier.** See Vendor.

**3.70 Symmetrically opposite parts.** Symmetrically opposite parts are those parts which are mirror images of each other.

**3.71 System (general).** A composite of equipment, skills and techniques capable of performing or supporting an operational role or both. A complete system includes all equipment, related facilities, material, software, services and personnel required for its operation and support to the degree that it can be considered a self-sufficient unit in its intended operational environment. (MIL-STD-280)

**3.72 Unit.** An assembly or any combination of parts, subassemblies and assemblies mounted together normally capable of independent operation in a variety of situations. (Examples: Hydraulic jack, electric motor, electronic power supply, internal combustion engine, electric generator, radio receiver.)

NOTE: The size of an item is a consideration in some cases. An electric motor for a clock may be considered as a part because it is not normally subject to disassembly.

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**3.73 Vendor.** A source from whom a purchased item is obtained; used synonymously in this standard with the term supplier.

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### 4. GENERAL REQUIREMENTS

**4.1 Coverage.** The general requirements for the preparation of engineering drawings and associated lists shall be in accordance with ASME Y14.100M except as detailed in Chapter 100, as contained herein, as required for Government applications.

**4.1.1 Reference to this standard** Unless otherwise specified, where drawings are based on this Standard, this fact shall be noted on the drawings. References to this Standard may include the applicable Revision level (letter) and Notice number(s). See 6.2.2.

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### 5. DETAILED REQUIREMENTS

**5.1 Applicability** Detailed requirements for the preparation of engineering drawings and associated lists shall be in accordance with the following (See 6.7):

- **Types and Applications of Engineering Drawings:** ASME Y14.24M and Chapter 200 as contained herein.
- **Drawing Titles:** Chapter 300 as contained herein.
- **Numbering Coding and Identification:** Chapter 400 as contained herein.
- **Markings on Engineering Drawings:** ASME Y14.100M and Chapter 500 as contained herein.
- **Revisions of Drawings:** ASME Y14.35M
- **Associated Lists:** ASME Y14.34M

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**6. NOTES**

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

**6.1 Intended use.** The requirements contained herein apply to hardcopy drawings, digital data file(s), associated lists and textual data resulting from the contractual application of DOD-D-1000, MIL-DTL-31000 or MIL-T-47500.

**6.1.1 Applicability.** The current document specifying engineering drawings as a technical data package element is MIL-DTL-31000. DOD-D-1000 and MIL-T-47500 are inactive for new design.

**6.2 Acquisition requirements.**

**6.2.1 Issue of DODISS.** When this standard is used in acquisition, the applicable issue of the DODISS must be cited in the solicitation (see 2.1.1, and 2.2).

**6.2.2 Tailoring guidance.** To ensure proper application, MIL-STD-100G and ASME Y14.100M must be tailored to exclude unnecessary requirements. It is essential that the contractual applicability of the numerous referenced documents, as contained in these two standards, especially regarding basic practices, be as definitive as practicable. Any tailoring of MIL-STD-100G and ASME Y14.100M must also be consistent with MIL-DTL-31000, TDP Option Selection Worksheets. Although the manner and extent of such tailoring will vary in accordance with program or end-item requirements, the following is provided as a minimum for consideration in acquisition documents:

**TAILORING****A. Drawing Media (Choose all that apply)**

- |                                 |                          |
|---------------------------------|--------------------------|
| (1) Non-digital (Specify_____)  | <input type="checkbox"/> |
| (2) Digital Data (Specify_____) | <input type="checkbox"/> |
| (3) Other (Specify_____)        | <input type="checkbox"/> |

**B. Drawing Format (Choose One)**

- |   |                          |
|---|--------------------------|
| (1) Contractor                                    | <input type="checkbox"/> |
| (2) Government (forms supplied by the Government) | <input type="checkbox"/> |
| (3) Government (forms supplied by the Contractor) | <input type="checkbox"/> |

**C. Drawing Sheet Size (and Format) (Choose One)**

- |                 |                          |
|-----------------|--------------------------|
| (1) ASME Y14.1  | <input type="checkbox"/> |
| (2) ASME Y14.1M | <input type="checkbox"/> |

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## D. Drawing Reference to MIL-STD-100 (4.1.1) (Choose all that apply)

- (1) Reference to MIL-STD-100 will not appear on drawing ☐
- (2) Reference to MIL-STD-100 will be made on drawing ☐
- (3) Reference to MIL-STD-100 to include applicable revision level ☐
- (4) Reference to MIL-STD-100 to include applicable revision level and notices ☐

## E. Application Data (Choose all that apply)

- (1) Contractor option ☐
- (2) Required ☐
  - (a) On drawing ☐
  - (b) By reference. Specify \_\_\_\_\_ ☐
  - (c) Contractor option ☐
- (3) General use or multi-use notations ☐
  - (a) allowed ☐
  - (b) not allowed ☐

## F. Drawing Detail (ASME Y14.24M) (Choose all that apply)

- (1) Monodetail ☐
- (2) Multidetail ☐
- (3) Tabulated ☐

## G. Dimensioning and Tolerancing (Choose all that apply)

- (1) Metric ☐
- (2) Decimal-inch ☐
- (3) Application of ASME Y14.5M ☐
  - (a) Specific issue (revision) required (Specify issue \_\_\_\_\_) ☐
  - (b) Issue in effect (Specify issue \_\_\_\_\_) ☐

## H. Drawing Notes (Choose One)

- (1) On drawing ☐
- (2) By reference. Specify \_\_\_\_\_ ☐
- (3) Contractors option ☐

## I. Types of Drawings (ASME Y14.24M and Chapter 200) (Choose one)

- (1) Contractor selects ☐
- (2) Government selects ☐



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J. Maintenance of Multi-Sheet Drawings (ASME Y14.35M)  
(Choose all that apply)

- (1) Drawing revision level (DOD preferred) ☐
- (2) All sheets same revision level ☐
- (3) Sheet revision level ☐

## K. Redrawn Drawings (redrawing without change) (ASME Y14.35M ) (Choose one)

- (1) Advance revision level ☐
- (2) Revision level is not advanced ☐

## L. Maintenance of Revision History (Choose all that apply)

- (1) Contractor option ☐
- (2) Optional methods ☐
  - (a) Remove one or more revision record as required ☐
  - (b) Remove all previous revision history ☐
  - (c) Remove all revision history but retain line entry for revision authorization and date of revision ☐
  - (d) Remove all except revision preceding current ☐
  - (e) Maintain revision history in its entirety ☐

## M. Adding Sheets (ASME Y14.35M) (Choose all that apply)

- (1) Contractor option ☐
- (2) Optional methods ☐
  - (a) Renumber sheet using consecutive whole numbers ☐
  - (b) Number added sheets in decimal-number sequence ☐
  - (c) Number added sheets in alpha-numeric sequence ☐

## N. Deleting Sheets (ASME Y14.35M) (Choose all that apply)

- (1) Contractor option ☐
- (2) Optional methods ☐
  - (a) Renumber all affected remaining sheets ☐
  - (b) Affected remaining sheets not renumbered (revision status of sheets block is updated with notations such as CANC or DEL) ☐

## O. Markings on Engineering Drawings (Choose one)

- (1) Special items and processes apply ☐
  - (a) Applicable symbols (Specify \_\_\_\_\_) ☐
  - (b) Applicable special notes (Specify \_\_\_\_\_) ☐
- (2) Special items and processes do not apply ☐

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## P. Associated Lists (ASME Y14.34M) (Choose all that apply)

- (1) Non-digital (Specify\_\_\_\_\_) ☐
- (2) Digital Data (Specify\_\_\_\_\_) ☐
- (3) Other (Specify\_\_\_\_\_) ☐

## Q. Types of Associated Lists (ASME Y14.34M) (Choose all that apply)

- (1) Parts Lists ☐
  - (a) Integral ☐
  - (b) Separate ☐
  - (c) Contractors option ☐
- (2) Data Lists ☐
- (3) Index Lists ☐
- (4) Other (Specify\_\_\_\_\_) ☐

## R. Angle of Projection (ASME Y14.3M) (Choose one)

- (1) 3rd Angle ☐
- (2) 1st Angle ☐

## S. Language (Choose one )

- (1) English required ☐
- (2) Other (as specified) ☐

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**6.3 International agreements.** Certain provisions of this Military Standard are the subject of International Standardization Agreements (see following listing). When revision or cancellation of this standard is proposed which will affect or violate the International Agreement concerned, the Preparing Activity will take appropriate reconciliation action through international standardization channels including departmental standardization offices, if required.

**6.3.1 Air Standardization Coordinating Committee (ASCC), Air Standards (AIR STDs):**

- ASCC AIR STD 104/2, Graphical Symbolology for use on Engineering Drawings and Associated Data.
- ASCC AIR STD 104/5, Definitions for use on Engineering Drawings and Associated Data.
- ASCC AIR STD 104/6, Engineering Drawing Formats.
- ASCC AIR STD 104/9, Abbreviations for use on Engineering Drawings and Associated Data.
- ASCC AIR STD 104/10, Engineering Drawing Titles.
- ASCC AIR STD 104/11, Types of Engineering Drawings.
- ASCC AIR STD 104/12, Numbering, Coding and Identification of Engineering Drawings.
- ASCC AIR STD 104/13, Revision of Engineering Drawings.
- ASCC AIR STD 104/20, Electrical and Electronic Diagrams
- ASCC AIR STD 104/24, Engineering and Associated Data Lists
- ASCC AIR STD, 104/26, Engineering Drawing Practices

**6.3.2 American, British, Canadian, Australian (ABCA) Army Standardization Program, Quadripartite Standardization Agreements (QSTAGs):**

- QSTAG 229, Abbreviations For Use On Drawings.
- QSTAG 275, Graphical Symbols For Electrical and Electronic Diagrams.
- QSTAG 323, Welding Symbols.
- QSTAG 324, Welding Terms and Definitions.
- QSTAG 326, Graphical Symbols For Use In Diagrams For Fluid Systems In Army Vehicles (Excluding Aeronautic or Guided Weapon (Missile) Systems)

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**6.4 Drawing ownership and drawing identification**

**6.4.1 Drawing identification.** Drawing identification is provided by the combination of the original design activity CAGE Code and the drawing number. Drawing identification would therefore be established by the combination of a Government original design activity CAGE Code and a Government supplied drawing number, or a contractor original design activity CAGE Code and a contractor furnished drawing number. Accordingly, it is a violation of the intent of drawing identification to attempt to establish drawing identification by either a combination of Government CAGE Code and contractor furnished drawing number or contractor CAGE Code and Government furnished drawing number.

**6.4.2 Design activity, current or original.** Correct application of this standard necessitates that drawing ownership, change control authority, and design responsibility be identified with the current or original design activity CAGE Code appearing on the drawing. The design activity CAGE Code and address appearing in the title block is intended to identify that activity that had initial or original design activity (ownership, change control or design authority) responsibility. Since drawing identification can never be changed, a transfer of design activity responsibility requires the addition of the gaining activity CAGE Code and address to the drawing, as detailed in Chapter 400.

**6.4.3 Drawing ownership.** If for contractual or drawing maintenance purposes, the indication of current or original design activity does not reflect the actual status of drawing ownership or change control authority, that activity having final change control authority must add their CAGE Code and address to the drawing as current design activity. In this way, for example, if a CAGE Code and address in the title block reflects drawing origin, contractual preparation, or maintenance responsibility, but the drawing is the legal property of another activity, it is essential that the activity claiming the drawing as legal property add their CAGE Code and address as current design activity.

**6.5 Ozone depleting chemicals.** The identification of ozone depleting chemicals must be in conformance to Section 602(a) of the Clean Air Act Amendments of 1990 (42USC 7671a) as identified in Section 326 of PL 102-484.

**6.6 Application of MIL-STD-100.** MIL-STD-100 has largely been replaced by non-Government Standards. MIL-STD-100G contains only Government unique requirements, and is restricted for use to those DoD activities having DoD peculiar logistics requirements or specific and fully justifiable requirement for TDP delivery and maintenance control by a DoD design activity. Unless it is essential that drawings indicate a Government design activity CAGE Code, the preferred standard for engineering drawing practices is ASME Y14.100M. ASME Y14.100M addresses engineering drawing practices in commercial applications or where DoD design requirements need not be under the change control authority of a DoD activity. All referenced documents and detail associated with basic drawing practices are contained in ASME Y14.100M. Accordingly, MIL-STD-100G, when applicable, must always be used in conjunction with ASME Y14.100M. In addition, since requirements for broad areas, of subject material are now addressed by individual ASME standards, either MIL-STD-100G and ASME Y14.100M must be used in conjunction with , ASME Y14.24M, Types and Application of Engineering Drawings, ASME Y14.34M, Associated Lists, and ASME Y14.35M, Revisions to Drawings and Associated Lists.

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It is essential to drawing interpretation that past versions of MIL-STD-100 that were contractually invoked for the delivery of drawings continue to apply, and that no drawing under the CAGE Code of a Government design activity be interpreted under or make direct, sole reference to ASME Y14.100M.

**6.7 Reference to non-Government standards.** Very broad areas of the subject matter of MIL-STD-100 have been replaced by or incorporated in to non-Government Standards (NGSs). Every effort was made to harmonize the technical content and availability of the applicable NGSs to the requirements contained herein. However, users of Revision G to MIL-STD-100, especially during the earliest stages of initial issue, may find that the apparent corresponding NGS is not yet available or fails to support basic document preparation requirements. In order to overcome this condition in satisfying a contractual intent, or document preparation requirement or associated practice, the user should be prepared to detail the needed engineering drawing practice directly in the statement of work. Past issues of MIL-STD-100 may be used in attempting to establish the needed detail for entry in the statement of work.

**6.8 Subject term (key word) listing.**

Acronym  
Altered item  
Assembly  
Associated list  
Bulk item  
CAGE Code  
Contract number  
Critical safety  
Design activity  
Diagram  
Digital data  
Dimensioning  
Distribution Statement  
Drawing number  
Electrostatic Discharge Sensitive  
Item identification  
Notes  
Nuclear hardness  
Part or identifying number  
Parts list  
Product definition data  
Qualification  
Vendor item control

**6.9 Changes from previous issue.** Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

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## CHAPTER 100

### PREPARATION OF ENGINEERING DRAWINGS AND ASSOCIATED LISTS

**100. General.** This chapter and ASME Y14.100M establishes the essential general requirements and reference standards acceptable for the preparation of engineering drawings and associated lists.

**101. Basic practices.** Basic practices, including associated referenced standards, for the that are specific to preparation of engineering drawings and associated lists are contained in ASME Y14.100M. The detail contained herein is intended to provide visibility of those requirements that are specific to the Government.

**101.1 Metric practices.** Metric practices shall be in accordance with ASME Y14.100M.

**101.2 Graphic symbols, designations, letter symbols and abbreviations.** Graphic symbols, designations, letter symbols and abbreviations used on engineering drawings and associated lists shall be in accordance with this standard, the standards indicated below, and ASME Y14.100M. Where graphic symbols, designations, letter symbols and abbreviations are not covered by the listed standard; they may be used provided they are explained on each drawing or referenced to an explanatory document. The referenced explanatory documents for non-standard symbols shall be furnished with the engineering drawings. When non-standard graphic symbols, designations, letter symbols and abbreviations are used repeatedly, they should be forwarded to the custodian of this standard for possible inclusion in the respective standard.

**101.2.1 Graphic symbols.**

**101.2.2 Graphic symbols for flueric power diagrams.** Graphic symbols for flueric power diagrams shall be in accordance with MIL-STD-1306.

**101.2.3 Ship structural symbols.** Ship structural symbols shall be in accordance with MIL-STD-25.

**101.3 Printed board drawings.** Printed board drawings shall be in accordance with the requirements of MIL-STD-2118, ANSI/IPC-FC-250, and ANSI/IPC-D-275, as applicable.

**101.4 Data preparation, maintenance, delivery, or access.**

**101.4.1 Materials.**

**101.4.1.1 Plastic sheet or roll.** Originals on plastic sheet shall be in accordance with L-P-519, type I or II, class 2. Undimensioned drawings, printed wiring artwork masters, production masters, and master pattern drawings shall be in accordance with MIL-D-5480, Class 2, Type A or B; or L-P-519, type I or II, class 1.

**101.4.1.2 Paper, tracing.** Tracing paper for dimensioned drawings shall be in accordance with UU-P-561, Type as specified

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**101.4.1.3 Film, Diazotype.** Copies on sensitized, diazotype film shall be in accordance with L-F-340, Type and Class as specified.

**101.4.2 Digital data.** Engineering drawings prepared by other than manual means (such as computer generated drawings) shall provide all of the information required by the particular drawing type or level of design disclosure. Variations from the requirements as specified herein to accommodate document preparation will be acceptable so long as these variations meet the requirements relative to the information contents.

**101.4.2.1 Plotters.** If originals are maintained as digital data, copies resulting from electrostatic plotters need not meet the material, erasure and aging requirements of L-P-519 or A-A-2946.

**101.4.2.2 Maintenance.** Unless otherwise specified, requirements for erasure, aging and paper do not apply to associated lists prepared by automatic data processing, or drawings prepared and maintained as digital data.

**101.4.2.3 Associated lists, materials.** Associated lists prepared from digital data need not meet the requirements of 101.4.1.1 or 101.4.1.2.

**101.4.2.4 Physical media.** The physical media of digital product definition data shall conform to MIL-STD-1840.

**101.4.2.5 Initial Graphics Exchange Specification (IGES).** IGES data files shall be Class II application data subsets in conformance to MIL-PRF-28000 and MIL-STD-1840.

**101.4.2.6 Raster data files.** Raster data files shall be in accordance with MIL-PRF-28002 and MIL-STD-1840.

**101.4.2.7 Standardized General Markup Language (SGML).** SGML data files for predominantly textual engineering drawings shall be in conformance to MIL-PRF-28001 and MIL-STD-1840.

**101.4.3 Preparation of duplicate original.** Duplicate originals shall not be prepared for the purpose of maintaining duplicate records. Their application is limited to replacing missing original drawings.

**101.5 Drawing marking for item and package identification.** Drawings shall specify marking requirements for items, including item and package identification.

**101.5.1 Drawing requirements for part identification marking.** Delineation of part identification markings on a drawing shall be consistent with the requirements of Chapter 400 and MIL-STD-130, and shall be clear on such detail as method of application (for example, stamp or stencil), and materials (for example, ink per A-A-208).

**101.5.2 Packaged items.** Drawing requirements for package identification shall be consistent with the requirements of MIL-STD-129.

**101.5.3 Altered, selected, or source control item identification.** Altered, selected, and source control items shall be identified in accordance with MIL-STD-130.

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**101.5.4 Printed board assemblies.** Drawings pertaining to printed board assemblies shall specify marking location, content, method, size, material, priority of markings specified and the extent of applicability of MIL-STD-1285, MIL-STD-2118, or ANSI/IPC-D-275, as applicable.

**101.6 Code Identification, FSCM and CAGE Code.** Terms such as "FSCM" or "Code Identification" on existing documents or pre-prepared formats in stock need not be updated to "CAGE Code" or "CAGEC".



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## CHAPTER 200

**TYPES OF ENGINEERING DRAWINGS**

**200. General.** This chapter defines and illustrates the types of engineering drawings normally prepared by or for Departments and Agencies of the Department of Defense.

**201. Drawing types.** Drawing types shall be in accordance with ASME Y14.24M and the following:

NOTE: Under certain contracts or purchase orders, Government design or procuring activity approval may be required for the preparation of Source Control Drawings. See Appendix B for Qualification Provisions as applied to Source Control Drawings where the Government Activity (Army, Navy, Air Force) is identified by CAGEC and Name in the title block or indicated as "CURRENT DESIGN ACTIVITY".

**201.1 Standard microcircuit drawing (SMD).** An SMD is a control drawing, and shall disclose the applicable configuration, envelope dimensions, mounting and mating dimensions, interface dimensional characteristics, specified performance requirements, nuclear effects, and inspection and acceptance test requirements for microcircuits in a military application. Vendor item control drawings shall not be used to depict microcircuits (Federal Supply Class 5962) which comply with MIL-STD-883. Microcircuits compliant with MIL-STD-883 shall be depicted on an SMD. Guidance concerning SMDs is contained in MIL-HDBK-780. See Figure 200-2.

**201.1.1 SMD requirement.** An SMD shall depict Government requirements for existing commercial items in terms of performance, screening, and testing for military application.

**201.1.2 SMD limitation.** An SMD shall be prepared in lieu of source control and vendor item control drawings for microcircuits compliant with MIL-STD-883.

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REVISIONS													
LTR	DESCRIPTION							DATE (YR-MO-DA)			APPROVED		
REV													
SHEET													
REV													
SHEET													
REV STATUS	REV												
OF SHEETS	SHEET												
PMIC N/A		PREPARED BY			DEFENSE ELECTRONIC SUPPLY CENTER DAYTON, OHIO 45444								
<b>STANDARDIZED MICROCIRCUIT DRAWING</b>  THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE  AMSC N/A		CHECKED BY											
		APPROVED BY											
		DRAWING APPROVAL DATE											
		REVISION LEVEL											
		SIZE	CAGE CODE	5962-XXXX									
		A	67268										
		SHEET			OF								

DESC FORM 193  
JUL 91

5962-XXXX-YY

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

**Figure 200-1a. Standard microcircuit drawing title sheet.**

This sample drawing is informational only and complete to the degree necessary to illustrate a type of drawing. Actual format and drawing shall conform to the textual requirements set forth in this standard.

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STANDARDIZED MICROCIRCUIT DRAWING DEFENSE ELECTRONIC SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>		<b>5962-XXXX</b>
		REVISION LEVEL	SHEET XX

DESC FORM 193A  
JUL 91

**Figure 200-1b. Standard microcircuit drawing continuation sheet.**

This sample drawing is informational only and complete to the degree necessary to illustrate a type of drawing. Actual format and drawing shall conform to the textual requirements set forth in this standard.

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## CHAPTER 300 DRAWING TITLES

**300. General.** This chapter establishes procedures for creating titles for engineering drawings and names for items detailed thereon.

**301. Drawing title.** The drawing title shall be the name by which the part or item will be known and shall consist of a basic item name, Government type designator, if applicable, and sufficient modifiers to differentiate like items in the same major assembly. Reference to major assemblies or end items shall not be included as part of the drawing title for subassemblies and parts except when necessary to differentiate such items from similar items.

**301.1 Approved item names.** Approved item names are those item names listed in Cataloging Handbook H6, Federal Item Name Directory for Supply Cataloging. Approved item names are preferred for use in drawing titles. Item names not listed in H6 should be submitted, through the Government design or procuring activity, to the Defense Logistics Services Center (DLSC) for approval.

**301.2 Type designators.** Type designators, a combination of letters and/or numbers assigned by the Government for the purpose of item identification, are assigned in accordance with approved type designator - nomenclature systems such as:

Joint Electronics Type Designation System	MIL-STD-196
Army Nomenclature System	MIL-STD-1464
Mark and Mod Nomenclature System	MIL-STD-1661
Type Designation, Assignment and Method of Obtaining	MIL-STD-1812

**301.3 Assembly.** The term ASSEMBLY when used as a part of the drawing title shall conform to the definition contained in 3.7 and meet the requirements of Cataloging Handbook H6.

**302. Procedures for creating drawing titles.** Titles for drawings requiring modifiers shall be in two parts. The first part shall be the name. The second part shall consist of those additional modifiers and Government type designators necessary to complete the identification of the item.

**302.1 General rules.** The following rules apply to all drawing titles:

a. No abbreviations of any portion of the name (first part of the title) shall be made, except those necessarily used trademarked names and the words ASSEMBLY (ASSY), SUBASSEMBLY (SUBASSY), or INSTALLATION (INSTL). Abbreviations may be used in the second part of the title. Approved abbreviations are listed in ASME Y1.1. In general, the use of abbreviations should be avoided.

b. Titles of subassembly and detail drawings shall be consistent with the titles of the next assembly drawings, except where interchangeability of parts between assemblies makes

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consistency impractical or is prohibited by the Government design or procuring activity, or when such use limits application. The drawing title shall be shown in uppercase letters.

c. When a drawing is prepared to replace an existing drawing with a different number and the title of the drawing being replaced is in accordance with instructions contained herein, the same title shall be used. When the title of the drawing being replaced is not in accordance with these instructions, a new drawing title shall be developed.

d. A drawing title shall be as brief and simple as possible, shall describe the item and shall distinguish between similar items.

e. The names of parts detailed on a drawing shall consist of a noun or noun phrase. Modifiers may be used to distinguish between parts on the same drawing.

f. For words with dual or multiple definitions, the Military definitions as published in the Federal Item Name Directory for Supply Cataloging, Section A, Cataloging Handbook H6 shall have precedence.

g. If the drawing title appears on each sheet of a multisheet drawing, the exact same title shall appear on all sheets.

**302.2 First part of title.** The first part of the title shall be one of the following in order of preference.

a. An approved item name selected from the Federal Item Name Directory for Supply Cataloging, Section A, Cataloging Handbook H6, whose definition describes the item ("PIN, STRAIGHT, HEADED", "SPRING, HELICAL, COMPRESSION", "ENGINE, GASOLINE", "RIB, WING SECTION, INNER", "MODIFICATION KIT, RIFLE RACKS, MOUNTING")

b. Where the procedure outlined in 302.2a does not provide a suitable name, the following procedures shall be followed:

(1) The basic name shall be a noun or noun phrase. Modifiers shall be included as required by 302.2c.

(2) This noun or noun phrase shall establish a basic concept of an item. A compound noun or noun phrase shall be used only when a single noun is not adequate to establish a basic concept of an item. Cataloging Handbook H6 shall be used as a guide in establishing the noun or noun phrase.

(3) The noun or noun phrase shall describe the part and the usage of the part, and not the material or method of fabrication. A noun such as "casting", "forging", or "weldment" shall not be used except when a casting, forging or weldment shall be subject to further fabrication to make the designed part. In lieu of such a name, a noun or noun phrase shall be assigned which indicates what the item is or what it does, for example, "BRACKET" in the title "BRACKET, SUPPORT MIXING VALVE."

(4) The noun or noun phrase shall be used in singular form, except as follows:

(a) Where the only form of the noun is plural, as in, "TONGS".

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(b) Where the nature of the item requires the plural form, such as in "CLIMBERS" or "GLOVES".

(c) Multiple single items appearing on the same drawing, as in "Fuses", "Connectors", or "Fasteners".

(5) The word "ASSEMBLY" shall be used in names selected from Cataloging Handbook H6 exactly as published therein ("CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL"). When no applicable name appears in Cataloging Handbook H6 the word "ASSEMBLY" shall be used as the last word of the noun phrase ("INTAKE-MANIFOLD ASSEMBLY, GASOLINE ENGINE").

(6) An ambiguous noun, or one which designates several classes of items, shall not be used alone but may be used as part of a noun phrase.

Example:

Acceptable

SLIDE RULE

SOLDERING IRON

CIRCUIT CARD ASSEMBLY

PRINTED WIRING BOARD

PRINTED CIRCUIT BOARD

Unacceptable

RULE, SLIDE

IRON, SOLDERING

ASSEMBLY, CIRCUIT CARD

BOARD, PRINTED WIRING

BOARD, PRINTED CIRCUIT

NOTE: One of the most difficult tasks in naming any item is the determination as to when a noun should be qualified as being ambiguous. The general rule quoted above is amplified to some extent in the succeeding paragraph. When a noun does not expressly fit under any of these rules, one step in determining whether the selected noun is or is not ambiguous, is to refer to Cataloging Handbook H6 to see if it is listed. For example, if there is a question on the noun "plate", a review of the index will reveal many item names with the noun "plate" used, indicating the noun is not considered as being ambiguous.

(7) A trade-marked or copyrighted name shall not be used as the noun or noun phrase except where the technical name is extremely difficult ("FREON 12" rather than "DICHLORODIFLUOROMETHANE") or where no other name is available.

(8) When an item is not a container or material, but its name involves the use of a noun which ordinarily designates a container or material, a noun phrase shall be used as the basic name.

Acceptable

JUNCTION BOX

CABLE DRUM

SOLDERING IRON

Unacceptable

BOX, JUNCTION

DRUM, CABLE

IRON, SOLDERING

(9) The following words shall never be used alone but may be the last word of a noun phrase:

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Apparatus	Equipment	Plant
Assembly	Group	Ship
Assortment	Installation	Subassembly
Attachment	Kit	Tackle
Compound	Machine	Tool
Device	Mechanism	Unit
Element	Outfit	Vehicle

EXAMPLE: In certain instances, some of the listed words may be used as the first word in a basic noun phrase, as in "MACHINE SHOP" or "TOOL KIT".

c. When the noun or noun phrase represents an item to which types, grades, or varieties are applicable, the remainder of the first part of the title shall consist of one or more modifiers.

(1) A modifier may be a single word or a qualifying phrase. The first modifier shall serve to narrow the area of concept established by the basic name and succeeding modifiers must continue a narrowing of item concept by expressing more particular characteristics. A word qualifying a modifying word shall precede the word it qualifies, thereby forming a modifying phrase ("BRACKET, UTILITY LIGHT"). It is to be noted the word "UTILITY" qualifies the word "LIGHT" and precedes it in the modifying phrase.

(2) A modifier shall be separated from the noun or noun phrase by a comma and from any preceding modifier by a comma. The hyphen in compound words and the dash in type designators are not punctuation marks.

(3) The conjunction "or" and the preposition "for" shall not be used.

(4) The first part of the title shall be separated from the second part of the title by a dash.

**302.3 Second part of title.** The second part of the title shall consist of such additional modifiers, modifying phrases, or Government type designators as required. Modifiers indicating what an item is (its shape, structure, or form) or what the item does (its function) are preferable to modifiers indicating the application (what it is used for) or location of the item (where it is used)

Example:

SPRING, HELICAL COMPRESSION

First Part of Title

— RECOIL ADAPTER

Second Part of Title

a. When two or more drawings are similar, and the parts detailed on them perform the same general function, they shall be distinguished by additional modifiers indicating their location, relative position, forms, or dimensions, for example: RIB, WING SECTION, INNER-STATION 276.

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b. Nonpart drawings (such as schematic and wiring diagrams) should include the drawing type in the second part of the drawing title, for example: AMPLIFIER, FIRE CONTROL - SCHEMATIC DIAGRAM.

**303. Disclosure of security categories.** No word(s), symbol(s), nor any of their possible combinations which would disclose information in any of the established security categories, shall be used in drawing titles. See Appendix A.



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## CHAPTER 400

## NUMBERING, CODING AND IDENTIFICATION

**400. General.** This chapter establishes numbering, coding, and identification procedures for engineering drawings, associated lists, and documents referenced thereon. It also provides identification direction for parts, materials, processes, and treatments specified on these engineering drawings and associated lists.

**401. Commercial and Government Entity Code (CAGE Code).** The CAGE Code is a five-position code, of numeric or alphanumeric characters, applicable to activities which have designed, produced or are producing or supplying items used by the Government. It also applies to Government activities which control design, or are responsible for the development of certain specifications, drawings or standards which control the design of items. These codes are assigned in conformance with CAGE Cataloging Handbook, H4/H8. Activities not assigned a CAGE Code shall request such identification in conformance with the CAGE Cataloging Handbooks. Organizations which neither manufacture nor control design, such as dealers, agents or vendors of items produced by others, are assigned type "F" CAGE Codes and shall not be included as a design activity on a drawing. Type "A" CAGE Codes, for manufacturers, are applicable for use on drawings. CAGE Codes shall be entered in the appropriate block of the engineering drawing or associated list format and shall be preceded by the phrase "CAGE CODE". If necessary, because of space limitations, the phrase "CAGEC" may be used.

**402. Drawing number.** The drawing number consists of letters, numbers or combination of letters and numbers, which may or may not be separated by dashes. The number assigned to a particular drawing and the CAGE Code provide a unique drawing identification. The drawing number shall be assigned from numbers controlled by the design activity whose CAGE Code is assigned to the drawing.

**403. Drawing identification.** The drawing number and original design activity CAGE Code establish a drawing identification that shall be unique to that drawing. The relationship of drawing number and original design activity CAGE Code is inviolate, providing for drawing identification regardless of drawing ownership, design responsibility, adding of sheets, or current design activity. See 6.4.

**404. Part or identifying number.** The Part or Identifying Number (PIN) shall consist of letters, numbers or combinations of letters and numbers, which may or may not be separated by dashes or slashes that are assigned to uniquely identify a specific item. The PIN shall be or shall include the design activity drawing number, and may include a suffix identifier (if applicable). (See 406.6.). The PIN assigned to a specific item and the CAGE Code assigned to the drawing provide the basis for unique item identification.

**405. Find number.** A find number may be assigned to an item for the purpose of cross-referencing an item identified in a Parts List (PL) or table on the drawing to the location of the item in the field of the drawing, in lieu of using the PIN in the field of the drawing. The use of

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find numbers or direct reference to PINs is an option. However, the option selected should be applied consistently throughout any given drawing. Item identifications for parts or assemblies that are assigned a find number shall be itemized in the integral or separate PL or in a table on the drawing. Items identified as substitutes may be assigned the same find number as the items for which they may be substituted. The same find number may also be used to identify approved design variations. Find numbers are for cross-referencing purposes only within the drawing and associated lists, and shall not be used for procurement or marked on the items they represent or the assemblies containing the items. Reference designations in accordance with ANSI/IEEE STD 200 and IEEE STD 315 may be used as find numbers. See ASME Y14.34M.

**406. Identification requirements.** All drawings, associated lists and items shall be assigned identifications as follows:

**406.1 New drawings and associated lists.** New drawings and associated lists shall be assigned a CAGE Code in accordance with 401 and 406.4; drawing numbers in accordance with 402 and 406.5. Items shall be assigned PINs in accordance with 404, 406.6 and 406.10.

**406.2 Existing drawings and associated lists.** Existing drawings and associated lists which do not contain a CAGE Code, FSCM or Code Identification shall be assigned a CAGE Code in accordance with 401. The CAGE Code shall be placed as near as possible to the title block or associated list number. The CAGE Code shall be preceded by the phrase "CAGE CODE" or "CAGEC".

**406.3 Referenced documents.** All documents, other than Government or non-Government standardization documents referenced on drawings, shall be assigned a document identification number, and a CAGE Code. Reference documents shall be identified on the drawings in accordance with 406.11. The contractor design activity is responsible for assigning or obtaining document numbers and the CAGE Code for documents used with drawings. Technical orders, pamphlets and recordings are not considered referenced documents, and, therefore, shall not be referenced on engineering drawings without Government design or procuring activity approval.

**406.4 CAGE Code.** The CAGE Code shall be the CAGE Code of the design activity whose drawing number is assigned to the drawing and shall be entered on the drawing in the appropriate block, as shown in Figure 400-1. CAGE Code assignment shall establish a relationship between the assigned Code and the design activity name and address (appearing on the drawing), at the time of assignment. (Notice of change in design activity name or address are subject to review by the Government and are forwarded to: Defense Logistics Services Center, Defense Logistics Agency, Battle Creek, Michigan 49016.) See also 406.9.

**406.5 Drawing number structure.** The drawing number shall not exceed 15 characters. These characters may include numbers, letters, and dashes with the following limitations: (See 406.6).

- a. Letters "I", "O", "Q", "S", "X" and "Z" shall not be used; however, letters "S" and "Z" may be used only if they are a part of the existing drawing numbering system. They shall not be used in the development of new drawing numbering systems.
- b. Letters shall be uppercase (capital letters). Numbers shall be Arabic numerals. Fractions, decimals and roman numerals shall not be used.
- c. Blank spaces are not permitted.

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. d. Symbols such as: parentheses (), asterisks \*, degree °, plus +, shall not be used, except when referencing the Government or non-Government standardization document whose identification contains such a symbol.

e. The CAGE Code, drawing format size letter, and drawing revision letter are not considered part of the drawing number.

f. Drawing numbering systems shall preclude duplication of assigned numbers. Numbering systems may be based on either non-significant numbers or significant numbers.

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The diagram shows a drawing header with a wavy line representing a design activity. An arrow points from the label 'Design Activity' to the wavy line. Below the wavy line is a table with the following structure:

U.S. ARMY TANK-AUTOMOTIVE COMMAND WARREN, MICHIGAN 48397			
SIZE	CAGE CODE 19207	123XXXXX0	
SCALE	UNIT WT	SHEET	

Below the table, there are two labels: 'Design Activity' and 'CAGE Code'. An arrow points from 'Design Activity' to the wavy line. An arrow points from 'CAGE Code' to the 'CAGE CODE' cell in the table. To the right of 'CAGE Code' is the label 'Drawing No.' with an arrow pointing to the '123XXXXX0' cell in the table.

**FIGURE 400-1.** Example of CAGE Code, drawing no., design activity relationship as originally specified

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**406.6 PIN length and application.** PINs shall not exceed 15 characters. This number shall be or shall include the drawing number indicated on the drawing on which the item is described. Where more than one item is described on a drawing, unique identification shall be provided by the addition of a suffix identifier (formerly called dash number), with the following limitations: (For bulk items see 406.15.4).

- a. The total length of the PIN including the suffix identifier shall not exceed 15 characters.
- b. The suffix identifier shall have the same characteristics as drawing numbers (see 406.5).
- c. Suffix identifiers may be used even if only one item is described on a drawing.
- d. PINs shall not include the drawing revision (see 406.5.e).
- e. Once assigned, PINs shall not be changed except as permitted or required by 406.10 and 406.13. When additional items are added to a drawing, the PINs of existing items shall not be changed, even if no suffix identifier was originally assigned.

NOTE: Contractor-manufacturer part and drawing numbering systems. Contractors and manufacturers are encouraged to forward to the Commander, Defense Logistics Services Center, ATTN: DLSC-FBA, Federal Center, Battle Creek, Michigan 49016 an explanation of their part and drawing number systems.

**406.7 Records.** A complete and accurate record of drawing numbers shall be maintained by the design activity allocating or assigning the numbers. Duplicate drawing number assignment within an assigned CAGE Code shall be avoided.

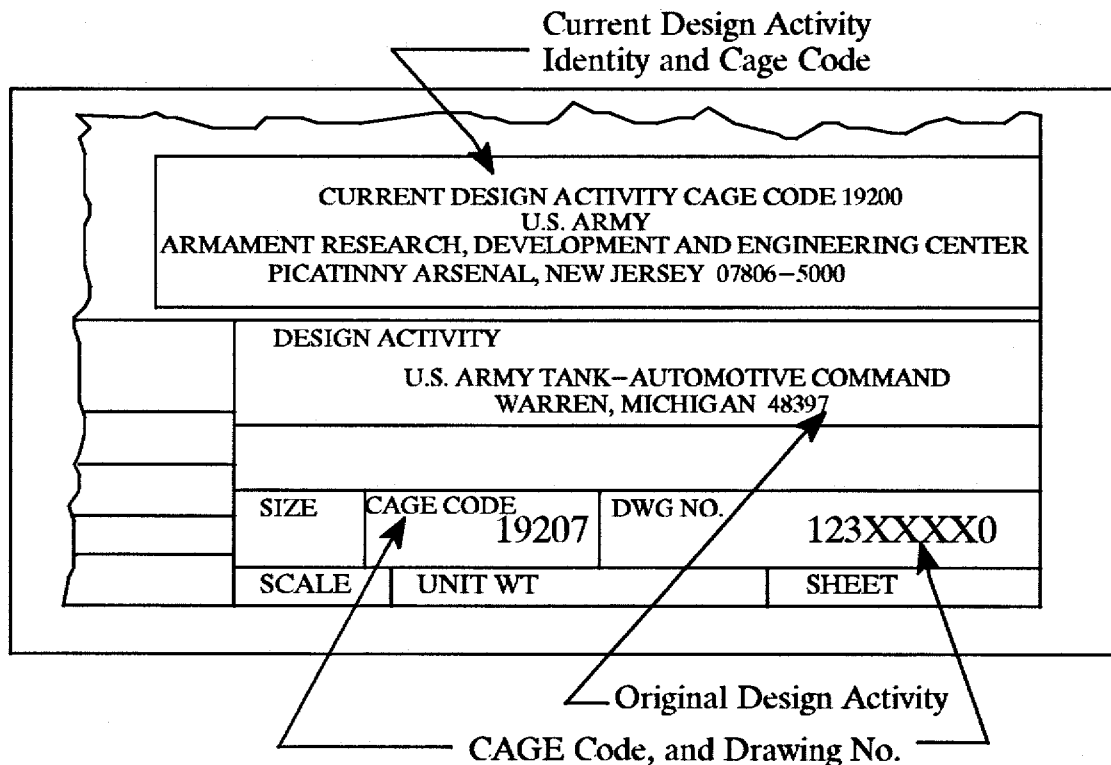
**406.8 Associated lists.** Associated lists shall be assigned the same identifying numbers as the parent drawing to which it pertains. This identifier shall be prefixed by the letters "PL" (for Parts List), "DL" (for Data List), "IL" (for Index List), "WL" (for Wire List), "AP" (for Application List), or "IDL" (for Indentured Data List), as applicable. This prefix becomes an integral part of the list identifier. When no parent drawing exists, associated lists shall be assigned a drawing number with the associated prefix "PL", "DL", "IL", "WL", "IDL", or "AL". The fifteen-character PIN limit shall not apply in those instances where the applicable associated list prefix plus the drawing number exceeds fifteen characters.

**406.9 Transferring design responsibility to another activity.** When the design responsibility for engineering drawings is transferred from one design activity to another, the drawing number(s) and PIN(s) shall be transferred to the new design activity for administration. The new assignee shall add his CAGE Code, name, and address on the drawing by revision action to identify change in design responsibility. In no case will the original drawing identity be changed or relocated to indicate a new CAGE Code. Figure 400-2 illustrates an example of drawing notations indicating a transfer of design responsibility.

NOTE: In addition, the CAGE Code of the original design activity specified in the item identification marking requirement shall not be changed.

**406.9.1 Maintaining design activity identities.** When drawings are redrawn, the original design activity CAGE Code and drawing number shall be shown in their applicable locations as on the original documentation. See Figure 400-2.

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**FIGURE 400-2. Example of drawing notation when design responsibility is transferred.**

**406.10 Item identification and PIN.** Each item shall be identified as follows:

- a. Design activity items shall be assigned PINs that meet the requirements of 406.6.
- b. When several items are detailed on a single drawing by tabulation, or through multi-detail, detail assembly, or installation drawing, each item shall be assigned a separate PIN meeting the requirements of 406.6.
- c. Altered and selected items shall be assigned a PIN meeting the requirements of 406.6.
- d. Source control items shall be assigned a PIN meeting the requirements of 406.6. See Note 1.
- e. The PIN for an item delineated on a vendor item control drawing shall be the part number assigned by the vendor. However, reference to the items depicted shall be to an administrative control number established by the vendor item control drawing and, as applicable, suffix identifiers. Administrative control numbers shall have the same requirements as a PIN. See Note 2.
- f. When interchangeable items are repairable, but the repair parts are not interchangeable, each item shall be assigned a separate PIN.

NOTE 1: Source control drawing numbers along with applicable suffixes establish PINs. When more than one vendor is listed on a source control drawing for items that are repairable and the

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repair parts are not interchangeable between the vendors, each vendor item shall be assigned a suffix identifier of the source control drawing.

NOTE 2: Vendor item control drawing numbers (and applicable associated suffix identifiers) shall not be used as a PIN to physically reidentify the item. Vendor item control drawing numbers are used as a cross reference to vendor part numbers for administrative and documentation control purposes.

**406.10.1 Identification cross reference.** When items are identified by more than fifteen characters or do not meet the other requirements of 406.5 and 406.6 and a design activity has no control over this assignment, an administrative control number may be assigned to the item in order to meet the identification requirements of 406.5 and 406.6. This includes items controlled by Government and non-Government standardization documents. The administrative control number shall identify the item for administrative purposes. See also "Identification Cross-reference Drawing", ASME Y14.24M and Chapter 200. Accordingly, the assigned administrative control number may reflect an actual identification cross-reference drawing or a data base entry.

**406.11 References to items.** References to items shall be made as follows:

a. Reference to items shall be made by complete PINs (see 406.10), find numbers (see 405), referenced designators, or administrative control numbers.

b. When an item is referenced on a document having the same number as the item, only the suffix identifier need be shown.

c. Reference to items covered by a published standardization document shall be made by the PIN established by the standardization document. If the standardization document number is not discernible from the PIN, it shall also be shown. See 406.15.

Example: RNC55H1001FS per MIL-R-55182/1

d. Reference to altered items or selected items shall be by the design activity assigned PIN.

e. Reference to source controlled items shall be by the design activity assigned PIN.

f. Reference to items delineated on vendor item control drawings shall be by the administrative control number.

**406.11.1 Vendor item control and source control notations.** When an item delineated on a vendor item control or source control drawing is referenced on the next assembly, or other applicable drawing or parts list, the reference (406.11e and 406.11f) shall be accompanied by one of the following applicable notations:

"VENDOR ITEM - SEE VENDOR ITEM CONTROL DRAWING" or

"VENDOR ITEM - SEE SOURCE CONTROL DRAWING".

**406.11.2 CAGE Code as a prefix.** PINs and referenced documents shall be preceded by the CAGE Code of the original design activity except:

a. When the part is a standard or specification item, the documentation for which is listed in the Department of Defense Index of Specifications and Standards (DoDISS).

b. When the referenced document is listed in the DoDISS.

c. When the CAGE Code for the item identified or document being referenced (detail callout) is common to the code of the document on which it is listed or referenced.



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d. When the CAGE Code is shown in the PL, it may be omitted from the part callout on the face of the drawing.

**406.12 Numbering of related parts.** Numbers to identify special relationships between parts shall be assigned as follows:

**406.12.1 Matched part designation.** Matched parts shall be marked with the word "SET" next to the PIN assigned to identify the matched set or pair of parts. See also ASME Y14.24M.

**406.12.2 Symmetrically opposite (mirrored) parts.** Symmetrically opposite parts, if not described by separate drawings, shall be described using one of the following methods:

a. Detail each part in a separate view. Each part shall be identified by the suffix identifier system. See 406.6. Do not specify "SHOWN" and "OPPOSITE".

b. Detail one of the parts in a view and identify each part by the suffix identifier system. See 406.6. For example, include on the drawing under the view the designation "765432-1 SHOWN" and "765432-2 OPPOSITE" or "-1 SHOWN" and "-2 OPPOSITE". The use of odd suffix identifiers for the parts shown and even suffix identifiers for the opposite parts is preferred. This method is useful if the view is clear enough to distinguish the opposite part.

**406.12.3 Inseparable assembly.** When two or more pieces are permanently fastened together by welding, riveting, brazing, cementing, bonding, or other processes to form an inseparable assembly, the assembly shall be assigned an identifying number. The individual pieces may be assigned PINs as described in 406.10 and called out on the inseparable assembly.

**406.13 Change requiring new identification.** When a repair part within an item is changed so that it is no longer interchangeable with its previous version, it shall be assigned a new PIN. A new PIN shall also be assigned to the next higher assembly for the changed repair part and to all subsequent higher assemblies up to and including the level at which interchangeability is re-established. The design or procuring activity shall assign new PINs when a part or item is changed in such a manner that any of the following conditions occur:

Condition 1. Performance or durability is affected to such an extent that superseded items must be discarded or modified for reasons of safety or malfunction.

Condition 2. Parts, subassemblies, or complete articles are changed to such an extent that the superseded and superseding items are not interchangeable.

Condition 3. When superseded parts are limited to use in specific articles or models of articles and the superseding parts are not so limited to use.

Condition 4. When an item has been altered, selected, or is a source control item. (see Chapter 200 and ASME Y14.24M)

**406.13.1 Computer program.** When an item is changed in such a way that it necessitates a corresponding change to a computer program for operation, self test or maintenance test, the PIN of the item and its next assembly and all progressively higher assemblies shall be changed up to and including the assembly where computer programs are affected.

**406.14 Changes not requiring new identification.** When a part or assembly is changed in such a manner that conditions of 406.13 do not occur, the PIN shall not be changed. Under no condition shall the PIN be changed only because a new application is found for an existing part. When an item has been furnished to the Government, the applicable PIN shall not be changed unless conditions in 406.13 apply. However, when a design activity desires to create a tabulated



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listing or a standard because of a multiple application of an item, the aforementioned need not apply. The superseded drawing shall identify the document which superseded it. The superseding document shall identify the PINs replaced and provide a complete cross-reference of superseded PINs to replacement PINs.

**406.15 Identification of materials, processes and protective treatment.** Materials, processes and protective treatment necessary to meet the design requirements of an item shall be identified on the drawing or PL by reference to the item identification, identification cross reference, or to the applicable specifications or standards, including type, grade, class, or condition as applicable. Revision or amendment symbol of the specification or standard shall not be indicated unless it can be established that a particular revision level or existing amendment has a critical relationship to drawing interpretation or item function. Additional reference to other equivalent specifications is permitted. If necessary these items may be reidentified in accordance with 406.10.1.

**406.15.1 Group identification.** A set of requirements common to items delineated on different drawings may be consolidated into a single document and referred to by a single document identifier. This document shall be part of the drawing set. A single document prepared to group together several requirements shall not be used to circumvent the requirement to prepare a specification.

**406.15.2 Other identification.** When parts, materials, processes and protective treatments are used which cannot be identified adequately in accordance with 406.10, a separate drawing or specification (if applicable) shall be prepared. See 406.10.1. The document or PIN shall be specified on applicable drawings.

**406.15.3 Formulation identification.** Formulation (such as chemical constituents of explosives, propellants, pyrotechnics or fillers) shall be considered and treated as a part and identified in accordance with 406.6 (PINs) or 406.11c (specification or standard based identifications).

**406.15.4 Bulk items identification.** Bulk items shall be identified by a discrete identifier in accordance with 406.10 or 406.15. Where practicable, the quantity or measurement of material shall be included. Separate engineering drawings shall not be prepared for specific quantities of bulk items, unless the conditions specified in 406.15.4.1 apply.

**406.15.4.1 Drawings for bulk items.** Any bulk item, requiring assignment of National Stock Number and not having an associated PIN system, shall require a drawing and PIN if no supporting documentation exists (such as a military specification or standard, or non-Government standard). Bulk items, which have a finite shape, such as wire, tubing, cable, chain, tape and hose, and are required for logistics support, shall be identified as a component on assembly or installation drawings through a discrete PIN consisting of a document number and suffix identifiers, as applicable to identify each size, length or quantities used in the assembly or installation. Accordingly, the absence of controlling documentation and PIN system shall require a separate drawing. Separate drawings shall not be prepared for bulk items covered by existing specifications or standards except where there is a support requirement and an absence of a PIN system.

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## CHAPTER 500

## MARKINGS ON ENGINEERING DRAWINGS

**500 General.** This chapter and ASME Y14.100M establish requirements for application of markings on engineering drawings and associated lists. These markings are used in support of and in addition to graphics and text to convey information about the drawing, the list or items depicted thereon. The intent of this chapter is to standardize marking nomenclature, control graphics of symbology, and indicate minimum requirements for management data that is currently mandatory for drawing and associated list maintenance and application by Government design or procuring activities.

**501 Symbology.** See Table I and ASME Y14.100M.

**502 Specialized notes.**

**502.1 Hardness critical note.** The following note shall be used for nuclear hardness critical items and processes:

THIS (enter the word DRAWING or PARTS LIST, as appropriate) DEPICTS HARDNESS CRITICAL ITEMS (HCIs) AND (OR) HARDNESS CRITICAL PROCESSES (HCPs). ALL CHANGES TO, OR PROPOSED SUBSTITUTIONS OF THESE HCIs OR HCPs SHALL BE EVALUATED BY (enter the engineering activity responsible for nuclear survivability.)

**503 Ozone depleting chemicals note.** The following note shall be used when the use of ozone depleting chemicals (see 6.5) is delineated on the drawing:

THIS (enter the word DRAWING or PARTS LIST, as appropriate) DEPICTS CLASS I OZONE DEPLETING CHEMICALS (ODCs).

**504 Security classification and notation.** Security classification and notations shall be in accordance with Appendix A.

**505 Rights in data legends on drawings.** Proprietary restrictions, such as limited rights and Government purpose license rights, shall be marked on applicable drawing sheets with the appropriate approved legend, as specified by the applicable subpart of the Defense Federal Acquisition Regulation Supplement (DFARS). Care should be taken to assure that the legend is delineated in the field of the drawing, within the margins. On drawings that are reproduced in segments, the legend should appear in each microfilm segment. Drawings in book-form need only delineate the legend on the title sheet.

**506 Distribution Statements.** Distribution Statements and associated Export Control Notices shall be in accordance with DoD Directive 5230.24. Distribution Statements shall be as specified by the Government design or procuring activity.

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**TABLE I. Acronyms for special items and processes**

<b>ACRONYM</b>	<b>DESCRIPTION</b>	<b>REFERENCE</b>
<b>CSI</b>	Critical Safety Item	MIL-STD-882
<b>CSP</b>	Critical Safety Process	MIL-STD-882
<b>ENI</b>	Environmental Impact	
<b>ESD</b>	Electrostatic discharge Sensitive Devices	MIL-STD-1686/ MIL-HDBK-263
<b>ESS</b>	Environmental Stress Screening	MIL-STD-2164
<b>HAZ</b>	HAZardous conditions, processes, or materials	
<b>HCI</b>	Hardness Critical Item	
<b>HCP</b>	Hardness Critical Process	
<b>I/R</b>	Interchangeability/Repairability	MIL-I-8500
<b>INT</b>	INTerface Control	
<b>OCI</b>	Observable Critical Item	
<b>OCP</b>	Observable Critical Process	
<b>ODC</b>	Ozone Depleting Chemical	See 6.5
<b>ODS</b>	Ozone Depleting Substance	See 6.5

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## APPENDIX A

## SECURITY CLASSIFICATION MARKINGS AND NOTATIONS

**A10. GENERAL.**

**A10.1 Scope.** This Appendix is intended to provide direction concerning the marking of security classifications and related notations on drawings. This Appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

**A20. APPLICABLE DOCUMENTS.****A20.1 Government documents.**

**A20.1.1 Other Government documents.** The following other Government documents form a part of this Appendix to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DOD 5220.22-M - DoD Industrial Security Manual for  
Safeguarding Classified Information

(Copies of DoD 5220.22-M are available from the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402-0001)

**A30. DEFINITIONS.** This Section is not applicable to this Appendix.

**A40. GENERAL REQUIREMENTS.**

**A40.1 Security classifications and notations.** Location of espionage, special security and regrading notes such as the sample classifications in Figure A-1, shall be in accordance with DoD 5220.22-M, and Command Security and Local Security requirements, and the direction contained herein.

**A40.1.1 Assigning classification.** Security classification on drawings and associated lists shall be consistent with project or program classification. Classification of associated lists shall be based on the content of the lists and not on the classification of the drawing.

**A40.1.2 Application of security classification.** Security classification markings may be generated from digital data, applied by decals, rubber stamps or by lettering template. Markings shall meet the reproduction requirements of the drawing or list.

**A40.1.3 Size of security markings.** Security markings shall be larger than any other marking or lettering size on the drawing or associated list.

**A40.1.4 Color of security markings.** All security classifications and notations shall be black.

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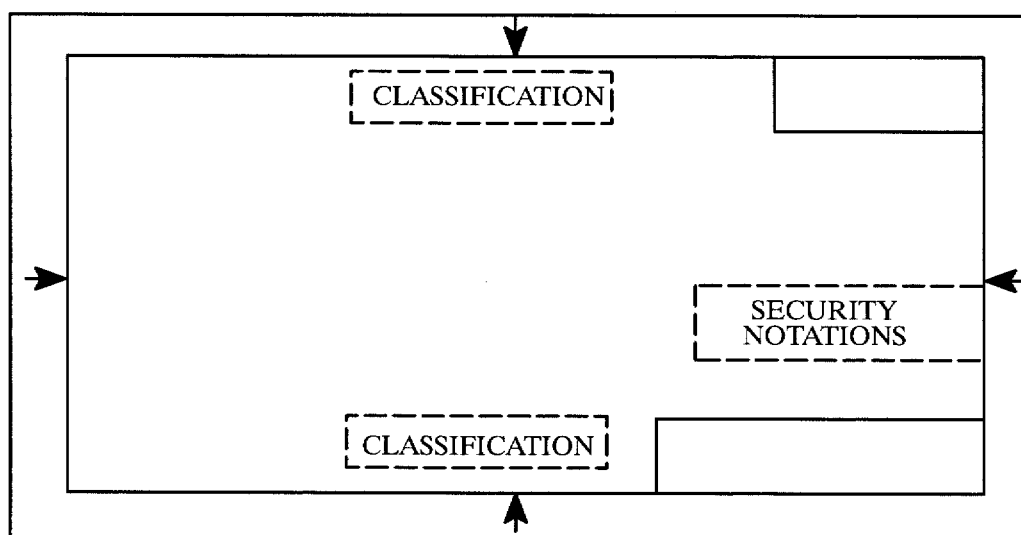
<p><b>NATIONAL SECURITY INFORMATION</b> UNAUTHORIZED DISCLOSURE SUBJECT TO CRIMINAL SANCTIONS</p>		<p>DOWNGRADE TO <b>SECRET</b> ON _____</p>	
<p>THIS DOCUMENT CONTAINS HIGHLY SENSITIVE INFORMATION WHICH WOULD BE OF SIGNI- FICANT INTELLIGENCE VALUE TO A POTEN- TIAL ENEMY. ACCESS WILL BE SEVERLY LIMITED TO THOSE INDIVIDUALS WHO MUST KNOW DESIGN DATA AND PRODUCTION TECHNIQUES OF IMPROVED CONVENTIONAL MUNITIONS IN ORDER TO EXECUTE OFFICIAL DUTIES.</p>		<p><b>CONFIDENTIAL</b> ON _____ DECLASSIFY ON _____ CLASSIFIED BY _____</p>	
<p><b>SECRET</b></p>	<p><b>CONFIDENTIAL</b></p>	<p>CLASSIFIED BY _____ EXEMPT FROM GDS OF <b>EO 11652</b> EXEMPTION CATEGORY _____ DECLASSIFY ON _____</p>	
<p><b>RESTRICTED DATA</b></p>			
<p>CLASSIFIED BY _____ SUBJECT TO <b>GDS OF EO 11652</b> AUTOMATICALLY DOWNGRADED AT TWO YEAR INTERVALS DECLASSIFIED ON DECEMBER 31, _____</p>			

FIGURE A-1. Sample security classification markings.

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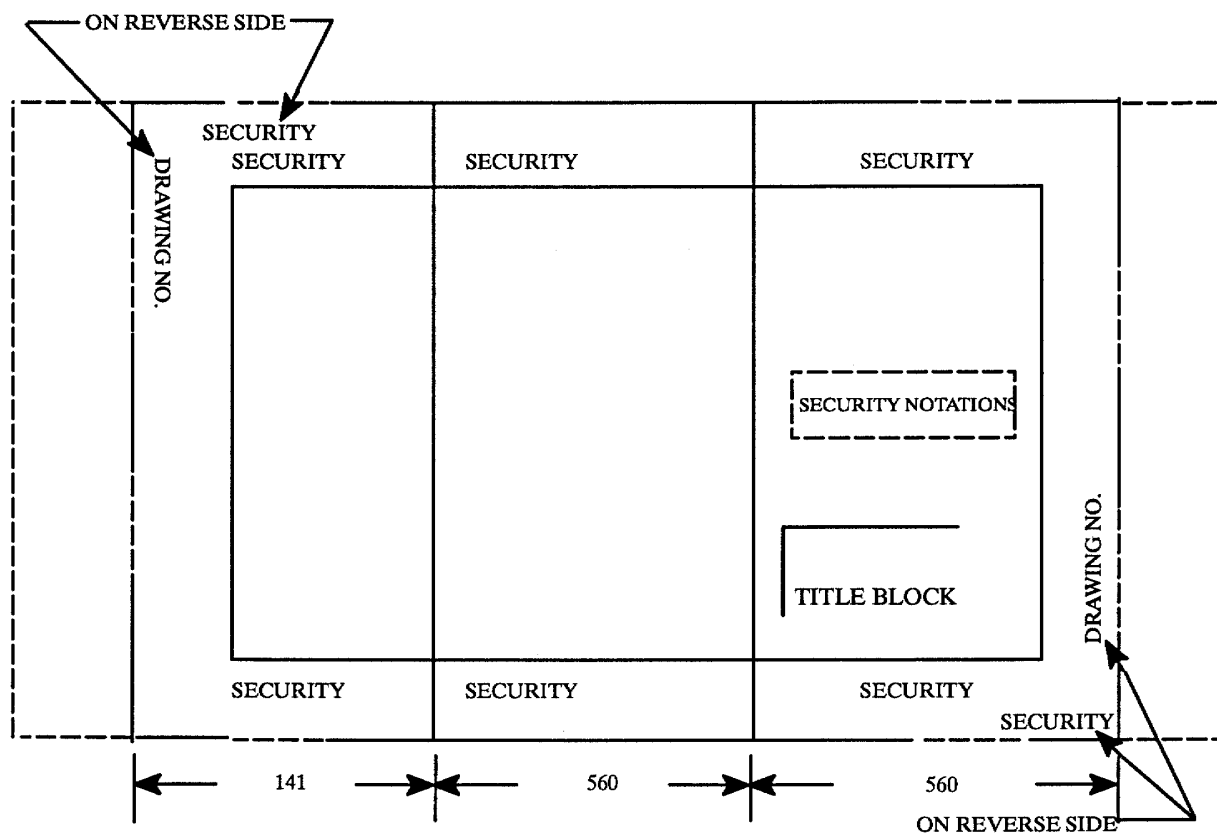
**A40.1.5 Location of security markings on drawings.** Security notations, such as espionage, special security and downgrading notes, shall be placed above the title block on classified drawings. Security classification shall be located within the body of the drawing (other than roll size) above and below the microfilm arrows. See Figure A-2. For sample location on roll size drawings, see Figure A-3.

**A40.1.5.1 Security markings on roll size drawings.** On roll size drawings security markings shall appear on both the face and the reverse of the drawing. The markings on the face of the drawing shall be shown in each drawing segment. The markings on the reverse of the drawing shall be shown on the corners. See Figure A-3.



**FIGURE A-2. Location of security markings on drawings.**

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**FIGURE A-3. Location of security markings on roll size drawings.**

[illegible]

**FIGURE A-4. Location of security markings on associated lists.**



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CLASSIFICATION							
<p>U.S. ARMY</p> <p>ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER</p> <p>PICATINNY ARSENAL, NJ 07806-5000</p> <p>CURRENT CAGE CODE 19200 - ORIGINAL CAGE CODE 19207</p>							
PARTS LIST                      PL-10513599 DOCUMENT/PART LIST   F 10513599 BODY ASSEMBLY REVISION AUTHORIZATION NUMBER A5H2521 AUTHENTICATION						REV. DATE 730131 REVISION LETTER P SHEET 1 ORIG. DATE 640630	
FIND NO.	QTY REQ	UNIT MEAS	CAGE CODE	PART OR IDENTIFYING NO.	DRAWING/DOCUMENT SIZE            NUMBER	NOMENCLATURE OR DOCUMENT TITLE	SUPPL LIST
	1			7649178	B 7649178	PLUG	
	2			7649181	B 7649181	WASHER	
	1			7649182	A 7649182	WASHER	
	2			7688718	C 7688718	LENS, OBJECTIVE	
<p>SECURITY</p> <p>NOTATIONS</p>							
CLASSIFICATION							

**FIGURE A-5. Location of security markings on digital data generated associated lists.**

APPLICATION						REVISIONS			
NEXT ASSY	USED ON		LTR	DESCRIPTION	DATE	APPVD			

**CLASSIFICATION**

TITLE SHEET IS UNCLASSIFIED WHEN SEPARATED FROM SHEETS (LIST SHEET NO. OF CLASSIFIED SHEETS)

REV																			
SHEET																			
REV																			
SHEET																			
REV STATUS	REV																		
OF SHEETS	STATUS																		

PMIC		CONTRACT NUMBER		DESIGN ACTIVITY	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES		CONTRACTOR			
TOLERANCES ON 2 PLACE 3 PLACE ± ±		DRAWN BY	DATE (YR-MO-DY)		
		CHECKER	ENGINEER	SIZE	CAGE CODE
		DRAWING APPROVAL		SCALE	UNIT WT SH
		DESIGN APPROVAL			

**CLASSIFICATION**

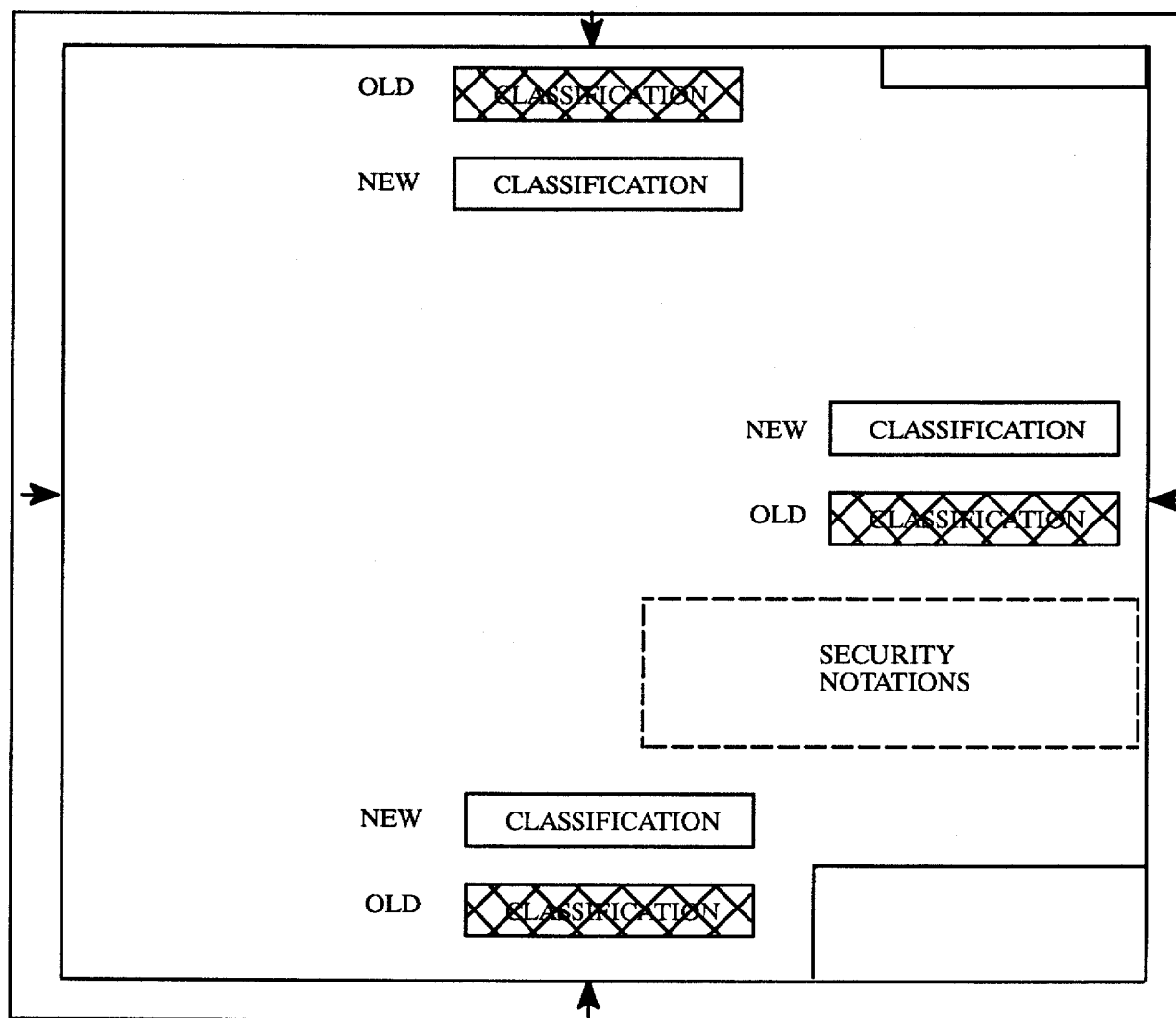
SECURITY NOTATIONS

TITLE	SIZE	CAGE CODE	
		REVISION LEVEL	SHEET

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**A40.1.8 Regrading classification** Documents shall be regraded by either lining out or removing classification and related notes. The current classification, except unclassified, shall be placed adjacent to the previous classification. The reclassification action constitutes a change; therefore, an applicable entry in the revision history block in accordance with ASME Y14.35M is required. See Figure A-7 (Note: The indication of "OLD" and "NEW" shall not appear on the drawing).



**FIGURE A-7. Regrading classification location.**

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## APPENDIX B

## QUALIFICATION PROVISIONS FOR SOURCE CONTROL DRAWINGS

**B10. GENERAL.**

**B10.1 Scope.** Qualification provisions for source control drawings are required pursuant Public Law 98-525, Title XII, Defense Procurement Act of 1984. The detail contained herein is to be followed prior to and during the process of approving sources of supply for inclusion on source control drawings. The detail provided also impacts drawing maintenance and the essential requirement of insuring spare part availability and logistics support. Issues or inquiries pertaining to sources of supply or the associated approval process for a particular source control drawing should be directed to the current Government design activity as identified by the CAGE Code (previously referred to as FSCM) indicated on the drawing. This Appendix is a mandatory part of this standard for Government activities. The information contained herein is intended for compliance by Government activities. See B40.12

**B20. APPLICABLE DOCUMENTS.** This Section is not applicable to this Appendix.

**B30. DEFINITIONS.**

**B30.1 Qualification.** The entire process by which items to be purchased are tested, prior to any actual procurement action, to ensure the item satisfies the specified requirements.

**B30.2 Small business.** A industrial entity satisfying the requirements of 13 Code of Federal Regulations 121.

**B30.3 Source control drawing.** A source control drawing provides an engineering description and acceptance criteria for purchased items that require design activity imposed qualification testing and provides performance, installation and interchangeability specific characteristics required for critical applications. It includes a list of approved manufacturers, the manufacturers' item identifications, and acceptance criteria for items which are interchangeable in specific applications. The source control drawing establishes item identification for the controlled item(s). The approved items and sources listed on a source control drawing are the only acceptable items and sources (ASME Y14.24M).

**B30.4 Source of supply.** For the purposes of this Appendix, a manufacturer approved for listing on a source control drawing.

**B30.5 Testing Laboratory.** A laboratory having facilities to perform the qualification examination and testing. This laboratory may be one of the following:

(1) **Government operated or contract laboratory.** A laboratory operated by, or under contract to, the Government.

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(2) **Laboratory not operated or contracted for by the Government.** A laboratory operated by or having contract with a manufacturer or distributor.

## **B40. GENERAL REQUIREMENTS.**

**B40.1 Purpose.** It is the objective of this Appendix to provide detailed instructions concerning the process of approving manufacturing sources of supply for inclusion on source control drawings and provisions for retention of approved source of supply status. It is further intended that the detail contained herein serves to standardize a product qualification process that is independent of end item application and procurement needs.

**B40.2 Intent.** The requirements contained herein apply qualification provisions to source control drawings. It is the intent of qualification to provide the Government products of requisite quality, reliability or safety through testing prior to and independent of award of contract. Such pretesting is in recognition of a complexity of performance requirements and sensitivity of design or end item application that render it impractical to rely on first article and acceptance testing. Qualification is intended for use in support of multiple acquisition and repetitive procurement by the Government and associated contractors.

**B40.3 Government source control drawings.** The provisions stated in this Appendix apply to the Government's use and management of source control drawings that:

- a. Are developed by or for the Government.
- b. Are identified with a Government CAGE Code and document number, or
- c. The Government owns the drawing original.

**B40.4 Qualification focal point.** The application of qualification procedure, process and instruction in an equitable manner, independent of program management or product necessitates candidate manufacturer access to a focal point within the design activity. The focal point must be responsive to industry request for qualification with specific procedural instruction, capable of directing candidate suppliers to appropriate Government approved or operated laboratories for testing, knowledgeable in the invoking of qualification provisions as contained in this Appendix and conveniently accessible and communicative to manufacturers, contractors, program managers and user industries or Government activities.

**B40.5 Multiple sources of supply.** Prior to concurring with or the establishing of a source control drawing, the design activity must insure the availability of two or more manufacturing sources. Single source-control drawings require specific approval from the Government design activity.

**B40.5.1 Existing drawings.** Existing single-source, source control drawings shall be periodically (every two years unless otherwise specified by the design activity) reviewed for possible conversion to other than source control if still required in support of procurement. If still required as source control drawings, additional sources of supply shall be developed in accordance with the provisions of B50.2.

**B40.6 Significance of listing.** The listing of a manufacturer as a source of supply on a source control drawing signifies only that, at the time of examination or test, the manufacturer could make a product that met the drawing requirements. Inclusion of a source of supply on a drawing:

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- a. Does not in any way relieve a contractor of contractual obligations to deliver products that comply with all drawing requirements.
- b. Does not guarantee acceptability of products delivered under a contract.
- c. Does not constitute a waiver of any requirement for inspection, for process control, or for maintenance of quality control procedures during production.

**B40.7 Manufacturer's obligation.** It is the responsibility of the manufacturer to maintain adequate process and quality control procedures during production. The manufacturer is required to report any discrepancies disclosed during periodic reexamination of its product and production process controls. The manufacturer must ensure that delivered items conform to the requirements for quality, reliability, and all other specified product characteristics and conform to the design indicated on the drawing.

**B40.8 Government obligations.** Government surveillance, initial or periodic, conducted by the design or procuring activity or their agent, does not relieve the manufacturer of the responsibility to exercise adequate process and product quality control procedures. The Government design or procuring activity will establish the single focal point as per B40.4 to consolidate findings and recommend corrective actions for problems associated with sources of supply on source control drawings.

**B40.8.1 Approved sources of supply.** A manufacturer whose product has been screened and tested in accordance with the applicable drawing will be considered qualified as a source of supply for the item whether or not inclusion thereon has been accomplished. Accordingly, it shall be the responsibility of the design activity to maintain a current record of sources of supply that have not been included (for example drawing revision through Engineering Change Proposal) on the actual drawings. Award of contract will include consideration of all approved sources of supply including those that have not yet been listed on the drawing.

**B40.9 Effecting changes to drawings.** The addition of manufacturing sources of supply to a drawing or changes required to such listing, for example manufacturer's name, address or product designation, requires that the drawing be revised in accordance with ASME Y14.35M.

**B40.10 Advertising.** A manufacturer may advertise source of supply status. However it must not be stated or implied in advertising that a product is the only type so qualified or that the DoD in any way recommends or endorses the product or source of supply status. Violation of this provision is cause for deletion from the drawing.

**B40.11 Qualification authority.** The authority for developing and approving sources of supply for listing on control drawings rests solely with the design or procuring activity. No using activity may use manufacturing sources other than that listed on the drawing without the concurrence of the design or procuring activity.

**B40.12 Qualification and award of contracts.** With respect to manufacturers requiring qualification, award of contract will be made only for manufacturing sources which are, prior to the award of contract, approved for inclusion on the applicable drawing whether or not such sources have actually been listed by that date. The attention of potential suppliers is called to this requirement, and manufacturers are urged to arrange qualification per this Appendix for those

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products, they propose to offer the Government, sufficiently in advance in order that they may be eligible to be awarded contracts or orders for the products covered by the applicable drawing.

Information pertaining to approval of manufacturers for inclusion on source control drawings should be obtained from the design or procuring activity.

**B40.13 Advertising and notices.** Advisory data to industry relative to source control drawings, (release of new drawings, drawing revisions, test program initiation, changes in scheduled qualification charges, and changes in Government requirements) is publicized by sending notice to:

Commerce Business Daily  
U.S. Department of Commerce  
433 West Van Buren Street  
Room 1304  
Chicago, Illinois 60607

Requests for publication made to the Commerce Business Daily should include the telephone number of the originator and, if applicable, a cut-off date for receipt of requests for qualification testing.

**B50. DETAILED REQUIREMENTS.**

**B50.1 Determinations to be made by the design or procuring activity.** In order to insure compliance with the provisions contained herein the design or procuring activity must determine that:

- a. There is no other satisfactory procurement vehicle (existing military specification, standardized military drawing or vendor item control drawing) for obtaining the required products other than producing a source control drawing.
- b. Two or more manufacturers are able and willing to qualify as sources of supply. See B40.5.
- c. Test facilities and resources (normally furnished or arranged by the manufacturer) are available to establish and maintain the qualified sources of supply.
- d. The costs of qualification are justified by the Government's needs.

**B50.2 Publicity.** The approval of new source control drawings, technical content revision of existing drawings and the development of multiple sources of supply is a matter of public knowledge and notification. Public notice is accomplished by the following means:

- a. A notice is sent to the Commerce Business Daily (see B40.13) for publication in the synopsis of U.S. Government Proposed Procurements Sales and Contract Awards. The notice must be clearly marked "Qualification Test Information" and must contain the following information:

- (1) Name of Product

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## (2) Applicable Drawing Identification

(3) Name and address of the design activity to be contacted for complete information on qualification under the drawing

b. Contact is made with manufacturers known to be interested in submitting products for qualification under the applicable drawing and with manufacturers known to supply the desired type of product. Known related trade associations are also notified in order to effect widespread publicity.

The notice published in conformance to the above is to be advertised in the context of the intention to approve a new "source control drawing" or development of "additional sources for single source drawings".

**B50.2.1 Additional notice to industry.** In addition to that indicated in B50.2 and at the discretion of the design activity, notices in the following form are sent to commercial journals and trade publications of the industry concerned through established channels for news releases:

"The (service or command), Department of the (Army, Navy, or Air Force), has announced the intention to establish (source control drawing, XXXXXXXX, titled...). Manufacturers which have a product meeting the requirements of this drawing are urged to contact (name and address of design activity) for an opportunity to test their products, since future acquisition awards will be made only to such sources of supply as have been approved for inclusion on the drawing. The cutoff date for applying to have products tested in order to become an approved source of supply in the initial issue of the drawing is (Date)." (The date is to be provided by the design activity.)

To promote competition, the notice specified above should be sent to all firms or individuals considered to be potential suppliers.

**B50.3 Application for qualification.** Each application for qualification must be addressed to the design activity identified on the applicable drawing and includes as a minimum, the following information:

- a. Drawing number, PIN, and associated title under which testing is desired including any type, grade or class designation.
- b. Applicant's brand designation or item identification for the product and exact location (including complete street address) of the plant at which the product was manufactured.
- c. If testing is to be conducted in other than a Government operated or contract laboratory the following information shall also be furnished:
  - (1) Location of plant or other facility at which tests are proposed to be performed. If more than one facility is available, list in the order of applicant's preference.
  - (2) With the initial application only, a list and description of testing equipment proposed to be used including the following:
    - (a) Applicable drawing requirements.
    - (b) Equipment name and manufacturer including type or model number and serial or inventory number.



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- (c) Equipment accuracy, limits, and latest date and place of calibration; frequency of calibration; and (when specifically requested) traceability of calibration to national or other recognized standards.
- d. Certification that the applicant:
  - (1) Agrees to be bound by all of the provisions and terms set forth in this standard.
  - (2) Is the manufacturer of the product.
  - (3) Has determined from actual tests (within the limits of test equipment commonly available, unless otherwise specified) that the product conforms to the applicable drawing. (Test reports and data should be furnished with the application.)
  - (4) Will supply items for test which are randomly selected samples from the manufacturer's normal production.
  - (5) Will supply products which meet the requirements of the drawing in every respect.
  - (6) Is prepared to overcome deficiencies disclosed by qualification tests.
  - (7) Will not apply for a retest of the product until satisfactory evidence is furnished that all of the defects which were disclosed by previous tests have been corrected. (Test reports may be required as evidence.)
  - (8) Will not state or imply in advertising or otherwise that a product(s), which has received Department of Defense Qualification Approval, is the only product of that type so qualified, or that the Department of Defense in any way recommends or endorses the product.
  - (9) Will notify the design activity of any change in his product (design, materials, or process) after qualification approval. The applicant will also state at the same time, whether:
    - (a) In his belief the change will or will not prejudice the capability of the product to meet the drawing requirements.
    - (b) He intends to submit new samples for testing or (after qualification approval) desires to have his company removed from the drawing.
    - (c) The changes will affect the applicant's brand designation for the product.
  - (10) Will, when requested by the design activity, submit certification signed by a responsible official of management, attesting that the tested product(s) is still available from the listed plant, can be produced under the same conditions as originally qualified, i.e., same process, materials, design, manufacturer's part number or designation and meets the requirements of the current issue of the drawing.

**B50.3.1 Additional information.** In certain cases where information required by B50.3 is considered by the design activity as insufficient to justify authorization for testing or approval as source of supply the applicant will be required to supply at no cost to the Government, the

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following information:

- a. The rate at which the product can be produced with the present plant facilities.
- b. Sketches, photographs, descriptive booklets, or other technical literature bearing upon his product, as illustrative of the scope of his manufacturing facilities which will assist in obtaining a clear conception of the product he is offering.
- c. Such additional information as is required by the applicable drawing.

**B50.3.2 Additional or limited rights data.** When specified, the applicant will furnish at no cost to the Government, for test record purposes, copies of any detailed plans, test results, or other data required. Government requests for this data must include instructions to the applicant that limited rights data or data that the applicant does not want disclosed to the public or used by the Government for purposes other than qualifying the product should be marked with the following statement:

"These data are considered by the supplier to be submitted in confidence and furnished for the purpose of facilitating qualification testing and are not to be disclosed outside the Government or be duplicated, used, or disclosed in whole or in part, for any purpose other than to evaluate the product submitted for qualification testing. This restriction does not limit the Government's right to use information contained in such data if it is obtained from another source without restriction."

Each item of data and each sheet that contains data to be protected is to be marked with the above statement.

**B50.4 Authorization for qualification.** After having received letter response and data, as required by the design activity, satisfying the requirements of B50.3, the design activity, without delay, will authorize initiation of testing and product inspection. Included with the letter of authorization will be a copy of the latest drawing, a schedule of testing costs, if applicable, and facilities survey requirements (see B50.6), if applicable.

**B50.5 Qualification data.** Data generated for the purpose of qualification is forwarded by the manufacturer to the design activity for review and approval.

**B50.5.1 Action on test data.** Upon completion of laboratory tests, the results will be analyzed by the design activity to determine if the product is qualified. The manufacturer will be notified concerning the results of the tests of his product, and whether or not the product qualifies under the requirements of the applicable drawing.

**B50.5.2 Authorization for retest.** In the event that qualification is disapproved or testing is discontinued, retesting of the product will not be authorized until satisfactory evidence is furnished to the design activity or its authorized agent that all of the defects which were disclosed by previous tests have been corrected. The design activity is solely responsible for determining whether the evidence is satisfactory.

**B50.5.3 Prior test data.** Unless otherwise specified by the design activity, data generated prior to the date of actual request for qualification will not be acceptable. The applicability of all test

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data to the development of sources of supply for inclusion on source control drawings will ultimately be at the discretion of the design activity.

**B50.6 Facilities survey.** Whenever the design activity requires facilities surveys, the survey will be conducted prior to authorization of test and applies to both domestic and foreign manufacturers. Facilities surveys will be conducted when specified by the design activity. Detailed requirements for these surveys will be specified by the design activity. Requirements may include survey of inspection systems, quality and reliability assurance programs, test facilities, production facilities, and line certifications. The survey will verify that the manufacturer has an effective self-audit program. If the survey has within its scope proprietary products or processes, this portion of the survey must be performed by, and any access to the limited rights information thereby exposed must be limited to, employees of the Government who have a need to know the information.

**B50.7 Retention of approved source of supply status.** At the request of the design or procuring activity, approved sources of supply will periodically (usually every two years or as otherwise specified by the design activity) be required to certify to product availability, manufacturing location and process, materials and design, and product conformance to the applicable drawing. Source of supply certification response will identify changes made to product after qualification and justification as to why such changes should not be cause for removal from the drawing. Failure to respond to the design activity request for certification will be cause for removal of that source of supply from the drawing.

**B50.7.1 Drawing revision.** Source of supply certification by the design activity will be initiated whenever a drawing is revised. Changes in sources of supply, product identification or manufacturer address will then be reflected on the drawing.

**B50.7.2 Changes in product.** When an approved source of supply notifies the design activity of a change in manufacturing process, location, design or materials, the design activity will evaluate those changes to determine if re-qualification is required. Sources of supply must requalify products to existing drawings at the direction of the design activity. Failure to requalify, after having been advised to do so, will be cause for withdrawal of approval as a source of supply.

**B50.8 Cost of testing.** With the exception indicated in B50.8.2, the costs of tests will normally be borne by industry. The Government may act as a testing activity for commercial interests in those instances when the Government derives commensurate, identifiable benefit from such testing. The Government will not bear any of the costs of testing incurred in connection with qualification tests performed in laboratories not operated or contracted by the Government. The costs of performing qualification tests in Government operated or contract laboratories may be shared (prorated) between the Government and applicant or wholly borne by the Government whenever charges for performance of tests are so large as to discourage requests for qualification. The charges will include both direct and indirect costs. A schedule of charges will be uniform for all applicants.

**B50.8.1 Changes in cost of testing.** Changes in scheduled charges for qualification to any drawing will be advertised in the Commerce Business Daily (see B40.13).

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**B50.8.2 Charges for small business concerns.** If the number of sources listed on a given drawing, available to compete actively for an anticipated future requirement, is fewer than two actual manufacturers, the cost of the initial qualification testing for a small business concern(s) may be paid for by the design activity. This provision is applicable if the small business concern successfully passes the qualification requirements and tests specified in the applicable drawing. Also, this provision is applicable if it is determined that such additional sources for products are likely to result in cost savings from increased competition for future requirements that exceed the costs associated with qualification testing. The costs associated with producing the items and establishing production control systems are not reimbursable. A projected ten percent reduction of procurement expenditures for the item in question over the next three years is the accepted guideline utilized for determining cost savings when supply sources are increased from one to two.

**B50.8.3 Charges for retesting.** The applicant will be required to pay the entire cost, or a large share of the cost, of retesting his product after initial failure, providing that each applicant is so advised in the initial authorization to submit samples. The charges for retest will be uniform for all applicants.

**B50.9 Availability of data.** Only that data derived at Government expense will be considered for distribution. After determination that such action is in the best interest of the Government, and in keeping with current security policy and regulations, the design activity may, at its discretion and acting upon specific request:

- a. Supply the data to other activities of the Government.
- b. Supply the data to foreign Governments which are purchasing, operating, or maintaining supplies that involve products covered by the drawing. Such release will be made with the condition that the information shall be used only in connection with furnishing supplies and services to that Government.

**B50.10 Data derived at industry expense.** Data derived in support of qualification, at private industry expense shall not be distributed without written authority from the source of supply involved. The design activity after receiving permission to release such data, will do so using B50.9 as guidance.

**B50.11 Deletion of a source of supply.** An approved source of supply is subject to deletion from a drawing by the design activity under any one of the following circumstances:

- a. The product offered under contract does not meet the requirements of the drawing.
- b. The manufacturer has discontinued manufacture of the product, or has changed design, materials, or processes to such an extent that the product no longer meets the requirements of the drawing.
- c. The manufacturer requests that the product be removed from the drawing.
- d. One or more of the conditions under which qualification was granted have been violated.
- e. The requirements of a revised drawing differ sufficiently from the previous issue so that existing test data are no longer applicable for determining compliance of the product with the

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drawing.

f. Failure of a manufacturer to notify the design activity of a change in design, material, manufacturing, process (including quality control), or plant location.

g. The product is that of a manufacturer, firm or individual whose name appears on "The Consolidated List of Debarred, Suspended and Ineligible Contractors".

h. The manufacturer has not complied with the requirements of B50.7.

i. The manufacturer marks the product in accordance with the drawing or with other markings in such a manner as to indicate that the product meets all requirements of the drawing when the product does not meet all such requirements.

j. The manufacturer has publicized that his qualified product is the only one of its type so qualified or that the Government has endorsed it.

k. The manufacturer, upon invitation, has failed or declined to bid on Government contracts for the product for ten consecutive solicitations or for a period of two years during which solicitations were issued, whichever is less.

**B50.11.1 Procedures for removal.** The following procedures apply in removing a source of supply from a drawing:

a. If the decision to remove source of supply from a drawing is made for reasons indicated in subparagraphs a, d, f, h, i, or j above, consideration will be given to the circumstances which gave rise to that action. The manufacturer will again be listed on that drawing once the deficiencies noted have been corrected to the Government's satisfaction. Factors to be considered by the design activity in making that determination are the seriousness of the deficiencies noted, the circumstances under which those deficiencies came to light (i.e., Government audit, voluntary disclosure), and whether circumstances indicate that such actions were intentional or fraudulently motivated or reflect a repeated or continuing course of conduct.

b. When a manufacturer is removed from a drawing, that manufacturer shall be sent a written notice (registered, with a return receipt requested) of the action taken, the reasons therefor, and an opportunity to respond to that notice. Unless the notice indicates otherwise, removal of a manufacturer from the drawing shall be effective immediately.

**B50.11.2 Notification of removal.** After a determination has been made to remove a manufacturer from a drawing, that manufacturer will be sent a notice of the intent to perform that action and actual drawing revision shall proceed without delay. If removal is for reasons in B50.11 above, the manufacturer will be advised of action required in order to remain an approved source of supply on the revised drawing.

**B50.11.3 Publication of removal.** When action has been taken by the design activity to effect the removal of a source of supply from a drawing, the design activity will determine whether it would be in the Government's interest to publish in the Commerce Business Daily and known related trade publications, a notification to Government organizations and contractors that the product has been removed by adverse action. When in the Government's interest, the design activity will publish such notification as soon as practicable. The notification will be in a form similar to that below:

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Drawing Number:

Title:

Notification is herewith given that the following vendor was removed from (drawing number) on (date).

(Name of Government Representative)

(Title of Government Representative)

(Name of Government Installation)

(Address of Government Installation)

**B50.12 Foreign manufacturers.** If the manufacturer is of foreign origin, the letter of notification of qualification will state that acquisition will be subject to all official agreements made by the Government, laws, and policies affecting acquisition of foreign-made products, in addition to the requirements of B50.3. Testing of products from foreign sources shall take place at a facility in the U.S. that is satisfactory to the design activity.

**B50.12.1 Reciprocal qualification agreements.** The recognizing of foreign products through reciprocal agreements between various countries, in lieu of actual qualification, does not apply to the process of approving sources of supply to control drawings

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### CONCLUDING MATERIAL

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**Preparing activity:**

Army - AR

(Project DRPR-0350)

**Review activities:**

Army - AT, AV, CE, CR, EA, GL, ME, MI, SC, SM, TE

Navy - AS, CH, EC, MC, OS, SH, TD, YD-1

Air Force - 11, 13, 19, 68, 70, 71, 79, 80, 84, 90, 99

DLA - CC, DH, GS, IS

NSA

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**MIL-STD-100G**

2. DOCUMENT DATE (YYMMDD)

**970609**

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**Engineering Drawing Practices**4. NATURE OF CHANGE (*Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.*)

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