

METRIC

MIL-STD-100E
INTERIM NOTICE 1(AR)
30 MARCH 1992

MILITARY STANDARD

ENGINEERING DRAWING PRACTICES

TO ALL HOLDERS OF MIL-STD-100E:

1. Make the following pen and ink changes:

- a. Page vi, paragraph 3.36. Change title to "Find number or item number".
- b. Page vi, paragraph 3.53. Change "(HCIs)" to "(HCI)".
- c. Page vi, paragraph 3.54 Change "(HCPs)" to "(HCP)".
- d. Page xvi, paragraph 704.11. Change title to "Authentication, parts, data. and index list".
- e. Page xvii, Appendix A. paragraph 40.3.2.1. Change "signatures" to "signature".
- f. Page xx, paragraph 400-1. Change title to "Example of CAGE Code, drawing no.. design activity relationship as originally specified".
- g. Page xx, paragraph 400-2. Change title to "Example of drawing notation when design responsibility is transferred".
- h. Page xxi, C-1. Change the title to "Dimensioning and tolerancing matrix".
- i. Page xxi, C-1. Change page number to "C-2/3"
- j. Page xxii. Change Table "500-I" to "I".
- k. Page 7. Change the title of "ANSI Y 10.20" to "Mathematical Signs and Symbols for Use in Physical Sciences and Technology (including ANSI Y10.20a)".
 - l. Page 8, Delete listing of "ANSI Y14.17".
 - m. Page 15, paragraph 3.4, second line. Change "recoganzed" to "recognized".
 - n. Page 16, paragraph 3.10, first line. Change "Bulk materials" to "Bulk items" in two places.
 - o. Page 17, paragraph 3.10. Delete all five lines from "In addition... "to"... bulk quantities".
 - p. Page 19, paragraph 3.24, third line. Change first "and" to "or".
 - q. Page 20, paragraph 3.33, first line. Change "either an" to "such as".
 - r. Page 31, paragraph 6.2.2, first line. Change Standard" to "standard".
 - s. Page 31, paragraph 6.2.2, second line. Change "statements of work" to "Contract Data Requirements Lists (CDRLs)".

AMSC N/A

DRPR

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

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- t. Page 200-1. paragraph 202.1. fifth line. Change "part number" to "PIN".
- u. Page 200-3." paragraph 204.1. Arrangement drawing. Delete "(See Note 3)". - .
- V. Page 200-5." NOTE 10. Change "101.15.3" to "101.15.2" and" 101.15.4" to "101.15.3".
- w. Page 300-4. paragraph 302.2b(7). third line. Change "DICHLORODIFLUORMETHANE" to "DICHLORODIFLOROMETHANE"
- x. Page 400-6. paragraph 406.9. third line. Change "part number(s)" to "PIN(s)".
- y. Page 400-9. paragraph 406.10.1. first line. Change title from "Re-identification" to "Identification cross reference".
- z. Page 500-3." paragraph 502.3. first line. Change title to "Superseded drawings".
- aa. Page 600-5. " paragraph 602.7. fourth line. Change "CAGE code" to "CAGE Code".

2. THE FOLLOWING PAGES OF MIL.-STD-100E HAVE BEEN REVISED AND SUPERSEDE THE PAGES LIST LISTED:

NEW PAGE	DATE	SUPERSEDED PAGE	DATE
21	30 September 1991	21	30 March 1992
22	30 September 1991	21	REPRINTED WITHOUT CHANGE
23	30 September 1991	23	30 March 1992
24	30 September 1991	24	30 March 1992
25	30 September 1991	25	30 March 1992
26	30 September 1991	26	30 March 1992
100-5	30 September 1991	100-5	30 March 1992
100-6	30 September 1991	100-6	30 March 1992
100-7	30 September 1991	100-7	30 March 1992
100-8	30 September 1991	100-8	30 March 1992
100-9	30 September 1991	100-9	30 March 1992
100-10	30 September 1991	100-10	30 March 1992
100-11	30 September 1991	100-11	30 March 1992
100-12	30 September 1991	100-12	30 March 1992
500-2	30 September 1991	500-1	30 March 1992
500-2	30 September 1991	500-2	30 March 1992
600-1	30 September 1991	600-1	REPRINTED WITHOUT CHANGE
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700-10	30 September 1991	700-10	30 March 1992
700-11	30 September 1991	700-11	REPRINTED WITHOUT CHANGE
700-12	30 September 1991	700-12	30 March 1992
B-5	30 September 1991	B-5	30 March 1992
B-6	30 September 1991	B-6	REPRINTED WITHOUT CHANGE
B-7	30 September 1991	B-7	REPRINTED WITHOUT CHANGE
B-8	30 September 1991	B 8	30 March 1992

3. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS.

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4. Holders of MIL-STD-100E will verify that page changes indicated above have been entered. 'Ibis notice will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the Military Standard is completely revised or cancelled.

5. Vertical lines are used in this Notice to denote changes (additions, modifications, corrections, deletions) from the basic standard. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the basic standard.

Custodian:
Army - AR

Preparing activity:
Army - AR
(Project DRPR-A326)

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3.36 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).

3.37 Firmware. The combination of a hardware device and computer instructions-or "computer data that reside as read-only software on the hardware device. The software cannot be readily modified under program control. (MIL-STD-480)

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

3.39 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).

3.40 Initial Graphics Exchange Specification (IGES). A neutral file format for the representation and transfer of product definition data among CAD/CAM systems and application programs. (MIL-STD-1840).

3.41 Interchangeable item. One which possesses such functional and physical characteristics as to be equivalent in performance to another item of similar or identical purposes: and is capable of being exchanged for the other item without selection for fit or performance, and without alteration of the items themselves or of adjoining items, except for adjustment.

3.42 Interface characteristic. Those characteristics which affect the physical or functional characteristics of co-functioning items. The characteristics are established to allow equipment or systems to be compatible with equipment or systems under the control of different customers, contractors, or design activities. Changes to interface characteristics shall be coordinated with all affected activities.

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

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

3.45 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.

3.46 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).

3.47 Matched parts. Matched parts are those parts, such as special application parts, which are machine or electrically matched, or other-wise mated, and for which replacement as a matched set or pair is essential.

3.48 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)

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

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3.50 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).

3.51 Non-part drawing. An engineering drawing that provides requirements, such as procedures or instructions, applicable to an item, when it is not convenient to include this information on the applicable part drawing. Examples include test requirements drawing and logic diagram.

3.52 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.

3.53 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 protect** 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.)

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

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

3.56 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.

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

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

3.59 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.

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

3.61 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)

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- 3.62 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.”
- 3.63 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.
- 3.64 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-D-28000).
- 3.65 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).
- 3.66 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.
- 3.67 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.

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3.68 Quality assurance provisions (QAP). QAP's are the documented requirements, procedures and criteria necessary for demonstrating that designs conform to user requirements and that materiel and associated services conform to approved designs. In the context of this standard, "QAP" is used to convey a document prepared separate from, but in direct support of, the stated drawing requirements.

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

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

3.71 Repairable. Having the capability of being repaired.

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

3.73 Revision. Any change to an original drawing which requires the revision level to be advanced.

3.74 Revision authorization. A revision authorization is a document such as a Notice of Revision (NOR), Engineering Change Notice or Revision Directive which describes the changes to be made to the drawing in detail and is issued by the activity having the authority to revise the drawing.

3.75 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.

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

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101.14.20 Abbreviations. Abbreviations shall be in accordance with MIL-STD-12.

101.15 Diagrams.

101.15.1 Electrical and electronics diagrams. Electrical and electronics diagrams and interconnection diagrams shall be in accordance with ANSI Y14.15, Y14.15a and Y14.15b.

101.15.1.1 Logic circuit diagrams. Logic circuit diagrams shall be in accordance with ANSI/IEEE Std 991.

101.15.2 Printed wiring drawings. Printed wiring drawings shall be in accordance with the requirements of MIL-STD-275, MIL-STD-2118 and ANSI/IPC-T-50, as applicable.

101.15.3 Printed board description in digital form. When printed board descriptions are in digital form (defined either by metric or customary units) the description and form shall be in accordance with ANSI/IPC-D-350 or MIL-D-28000.

101.16 Media for drawings and associated lists.

101.16.1 Materials.

101.16.1.1 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 masters, and printed wiring production masters shall be in accordance with MIL-D-8510, type II (per MIL-STD-275) or L-P-519, type I or II, class 1.

101.16.1.2 Paper tracing. Tracing paper for dimensioned drawings shall be in accordance with UU-P-501, Type as specified.

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

101.16.1.4 Paper, Diazotype. Copies on direct-positive, sensitized (diazotype) paper shall be in accordance with UU-P-22 1.

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101.16.1.5 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.

101.16.1.6 Digital data.

101.16.1.6.1 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 UU-P-561.

101.16.1.6.2 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.

101.16.1.7 Associated lists, materials. Associated lists prepared from digital data need not meet the requirements of 101.16.1.1 or 101.16.1.2.

101.16.2 Digital product definition data.

101.16.2.1 Magnetic tape. When specified as the physical media for data delivery, magnetic tape shall conform to MIL-STD-1840.

101.16.2.2. File structure. When specified, data files shall conform to MIL-D-28000 and MIL-STD-1840.

| 101.16.2.3 Initial Graphics Exchange Specification (IGES). IGES data files shall be Class II application data subsets in conformance to MIL-D-28000 and MIL-STD-1840.

| 101.16.2.4 Raster data files. Raster data files shall be in accordance with MIL-R-28002.

101.17 Scale. Drawings shall be drawn to a scale that depicts all details of the item clearly and accurately except as noted in 101.17.3.

101.17.1 Selection of scale. Drawings should show an object or assembly to full scale. When full scale is not practicable, drawings may be prepared to reduced or enlarged scale. It is desirable, whenever practicable, that detail drawings be prepared to the same scale as pertinent assembly drawings.

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101.17.2 Indication of scale. The scale or scales to which drawings are prepared shall be indicated thereon by the fractional method in the drawing scale block. The scale to which the majority of views and sections are drawn shall be entered as a fraction (1/1, 1/4, 2/1) after "SCALE*" in the space provided on each sheet of the drawing. The scale of each view or section drawn to other than the predominate scale shall be entered directly below the title of the view or section, for example:

SECTION A-A
SCALE 2/1

101.17.2.1 Fractional method. The fractional method expresses, in the form of a common fraction, the ratio of the size of the object as drawn to its full size. The following scales are preferred, but other scales (enlarged or reduced) may be used if approved by the design or procuring activity:

full size - 1/1

Enlarged - 10/1, 4/1, 2/1

Reduced - 1/2, 1/4, 1/8, 1/10, 1/20, 1/30, 1/40, 1/50, 1/60, 1/100

101.17.3 Drawing not to scale. In the case of diagrams, isometric, perspective, cable assemblies, tabulated and other drawings not prepared to any scale, the word "NONE" shall be entered after "SCALE" in the space provided on the drawing format. Drawings consisting predominantly of textual content need not have an entry in the scale block. Individual dimensions or illustrations on such drawings shall specify the applicable scale.

101.18 Drawing marking for item identification. Drawings shall specify marking requirements for items, including item identification, in accordance with Chapter 400 and MIL-STD-130.

101.18.1 Drawing requirements for part identification marking. Delineation of part identification markings on an associated drawing shall be consistent with the requirements of 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).

101.18.1.1 Identification marking location and size. The location and size (if necessary) of the identification marking shall be specified on the depiction of the item if it must be controlled due to functional or fit requirements or subsequent finish application. The location shall be identified by a leader

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pointing to a chain line box or the actual information to be marked, indicating approximate marking location or, if necessary, by dimensionally locating the marking where it will be applied. The location of identification marking on items that are subsequently coated and finished shall also be controlled and should be specified on surfaces that are not subjected to the coating or finish.

101.18.1.2 Tags and plates. Tags and plates shall be separately defined as a component by applicable specification, standard or drawing. The requirements for attaching an identification plate shall be specified on the using assembly drawing. The information to be included on the identification plate or tag when installed in the using assembly shall be specified on the assembly drawing or, if applicable, on the identification plate drawing. The information to be marked on the identification plate or tag when installed in the using assembly shall be specified on the assembly drawing.

101.18.1.3 Packaged items. Identification requirements for items which by their nature cannot be physically marked and are not permanently tagged or plate identified will be specified in accordance with MIL-STD-129.

101.18.1.4 Altered, selected or source control item identification. Altered, selected and source control items shall be identified in accordance with MIL-STD-130. When an item defined on a Vendor Item Drawing requires identification in addition to the manufacturer's part number an Altered Item Drawing shall be prepared to specify the exact marking requirements.

101.18.1.5 Printed wiring assemblies. Drawings pertaining to printed wiring assemblies shall specify marking location, method, size, material, priority of markings specified and the extent of applicability of MIL-STD-1285, MIL-STD-275, or MIL-STD-2118, as applicable.

101.19 Optional/alternative designs. Optional/alternative designs of manufacturing a part, such as "casting" versus "weldment" may be specified. Where the differences between the designs would cause confusion in one set of views, an additional view or views shall be prepared with complete dimensional and other data specified thereon. The additional view or views shall be labeled "Optional Design" or "Alternative Design". Multiple sheet drawings shall be prepared when necessary.

101.20 Depiction of castings and forgings. See 101.13.

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101.21 Drawing notes. Drawing notes are used to provide information required to clarify the requirements for the item delineated. They may apply to a portion of the drawing or to the entire drawing, providing additional treatment, finish, protection, or other considerations.

101.21.1 Languages style. Notes shall be short, concise statements, using the simplest words and phrases for conveying the intended meaning. Notes shall not include contractual requirements such as statements of costs, time and place of delivery, methods of payment, requirements for submission, approval or distribution of data, reports or plans.

101.21.2 Commonly used words and phrases. Certain words and phrases are frequently used on a drawing. The following rules shall be applied:

a. Reference documents shall be cited as follows:

- (1) "...per..."
- (2) "...conforming to..."
- (3) "...as specified in..."
- (4) "...in accordancce with..." or "... IA W..."

b. "Unless otherwise specified" shall be used to indicate the generally applied requirements. The phrase shall always come at the beginning of the sentence, and, if possible, at the beginning of the note. This phrase shall be used only when it is possible to clarify its meaning by providing a reference to another document, or requirement on the drawing, that clearly specifies the exception(s).

101.21.3 Use of "shall", "will", "should" and "may".

a. "Shall" "Shall", the emphatic form of the verb, shall be used whenever a requirement is intended to express a provision that is contractually binding.

b. "Will". "Will" may be used to express a declaration of purpose on the part of the Design Activity. It may be necessary to use "will" in cases when simple futurity is required'.

c. "Should" and "may". "Should" and "may" are used when it is necessary to express non-mandatoty provisions.

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101.21.4 Indefinite terms. Indefinite terms such as "and/or", "etc.", "e.g." and "i.e." shall not be used. On drawings, definite, precise language is imperative.

101.21.5 Location of notes. Notes shall be located on sheet one or reference shall be included on sheet one indicating note location. When notes are continued beyond a given sheet, information to that effect shall be included, for example "NOTES CONTINUED ON SHEET 4".

101.21.5.1 Drawings in book-form. For drawings in book-form, the notes or textual data may be prepared and grouped on continuation sheet(s) of the drawing.

101.21.6 Drawing notes, contents. Drawing notes are pertinent data given in word form and used to complement the delineation of other given data. Drawing notes shall be concise, grammatically correct statements. The arrangement of the notes shall not be interpreted as an order of precedence, or sequence in manufacturing or assembly unless so specified on the drawing. The following shall be applicable in the preparation or use of notes:

- a. General notes apply to the entire drawing or associated list.
- b. Local notes are notes which are located at the specific area or point of application. Requirements specified by local notes apply only to the areas or points indicated.
- c. Flagnotes are notes which are located with the general notes but apply only at specific areas or points on the drawing. A flagnote shall be identified with a flagnote symbol in accordance with 101.21.6f. The flagnote symbol including the note number shall be shown at each point of application.
- d. General notes and flagnotes shall be numbered consecutively as a single listing starting with Note 1. Filling in voids (open spaces) to accommodate deletions is not required. Note numbers of deleted notes shall not be reused unless the identical note content is reused.

1 00-10)

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e. Reference to standardization documents shall be by basic identifier, excluding revision letter, Preparing Activity suffix letters, "00" designation and existing amendments except where identification of a specific issue is essential to drawing interpretation. Master Drawings prepared to MIL-STD-275 shall include fabrication specification identifier, document date, and applicable revision letter and amendment number. Reference to DoD adopted non-Government standards shall be to the basic identifier, excluding revision level indicators or year of issue adopted, except where identification of specific issue is essential to drawing interpretation, as in the case of: ANSI Y14.5M, ANSI/IEEE Std 91 and ANSI/AWS A2.4. Reference to non-Government standards that are not DoD-adopted shall include the year of the issue applicable. However, in the case of ANSI Y14.5, reference shall always include the year of issue, ANSI Y14.5M-(enter the date of the ANSI Y14.5M, applicable to the drawing in question). See also 101.27.

f. Flagnote symbols, such as \triangle or \hexagon , or \triangleright , are placed around the note number when the note is referenced in the field of the drawing. A flagnote need not be used when specific direction is given to a drawing note such as "(SEE NOTE 3)". The same flagnote symbol shall be used throughout the drawing. Careful consideration should be given to the use of flagnotes on intricate or cluttered drawings; flagnote symbols shall not conflict with or resemble other symbols used on the drawing. Nonstandard symbols or annotations other than flagnotes shall be defined.

Examples. Drawing Notes:

② PER MIL-R-55182.

3. DIMENSIONAL LIMITS AND SURFACE TEXTURE APPLY WITHOUT PLATING .

④ PER WW-C-440, TYPE I, GRADE B, SIZE 1/2.

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5. ITEM IDENTIFICATION: METAL STAMP, ENGRAVE OR ELECTRO ETCH THE FOLLOWING MARKINGS PER MIL-STD-130 IN .13 ± .02 CHARACTER HEIGHT.

19200 - 12300007

MFR -

Examples, in field of drawing:

RNL5Y (2)

CB1245L (4)

g. A separate note shall be used for each, unrelated requirement to be specified in the drawing notes.

h. Each drawing for which a Quality Assurance Provision (QAP) or equivalent document is prepared shall have the following note entered in the general note column. The QAP number specified shall be that associated with the item.

QAP 12345XX8 APPLIES TO THIS ITEM.

i. Reference to other documents for the purpose of specifying requirements or drawing interpretation shall be as specific as possible. The whole of a given document shall not be made applicable by reference unless all of its provisions are required. When a portion of a document is applicable, the extent of its applicability shall be stated. However, reference to paragraph numbers in other documents shall not be made. Reference shall be to a method, identified requirement, class, grade or type. Reference shall be made only to documents whose technical currency and accuracy, and availability are assured.

j. Parts and assemblies associated with Special Items and Processes shall be identified in accordance with 501. Drawing notes may provide the basis for the Special Item and Process or make direct or parenthetical reference to documentation that provides such information.

101.22 Order of preference. The use of or reference to specifications and standards in notes shall be in an order of preference conforming to MIL-STD-970.

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CHAPTER 500
MARKINGS ON ENGINEERING DRAWINGS

500. General. This chapter establishes 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. Special items and processes. When special considerations of items or processes are applied, relevant drawings shall identify such items, processes, or both, as applicable, with specific markings, notations, or both. Symbols, descriptions, and relevant references, are indicated in Table I.

501.1 Marking for special items and processes. For drawings which contain special consideration item(s), process(es), or combination of item(s) and process(es), the appropriate symbol(s), as shown in Figure 500-1, shall be prominently displayed near the title block and shall use the same size letters as the drawing title. The symbol, Figure 500-1, shall also be placed at the line entry of the applicable item(s) or process(es) in the parts list and shall use the same size lettering as the parts list entries. Exceptions are as noted in 501.5.

501.2 Feature identification. When a specific feature of a drawing is the cause for special item or process status, that feature shall be identified with the appropriate symbol. The symbol shall be placed adjacent to the note or dimension(s) defining the characteristic. For tabulated dimensions or features, the table shall contain an entry for the applicable symbol.

501.3 Unique symbology. For drawings containing special items, processes, or items and processes, for which unique symbology has been developed, such symbology shall be used. Placement on drawings shall be in accordance with 501.1 and 501.2. Unique symbology examples are provided in Figure 500-1.

501.4 Notes. For drawing notes associated with special items and processes, refer to 101.2 k.6. If, on an assembly drawing, the special item or process is the assembly method(s) or procedure(s), this shall be reflected in the drawing notes. If the special item or process is itself a note, the symbol shall be placed as follows:

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Preferred: 5. CSI HEAT TREAT PER

Alternate: 5. HEAT TREAT PER *CSI*

501.4.1 Specialized note. The following note shall be used for hardness critical items or processes:

“THIS (enter the word DRAWING or PARTS LIST, as appropriate) DEPICTS HARDNESS CRITICAL ITEMS (HCI's) AND (OR) HARDNESS CRITICAL PROCESSES (HCP's). ALL CHANGES TO OR PROPOSED SUBSTITUTIONS OF THESE HCI's OR HCP's SHALL BE EVALUATED BY THE ENGINEERING ACTIVITY RESPONSIBLE FOR NUCLEAR SURVIVABILITY.”

501.5 Variances. For systems which cannot produce the boxed symbols, and for standard text, alternate symbols such as *HCI*, -OCP-, -CSI-, or *INT*, in applicable note and text size, may be used. The same symbology structure shall be used throughout the drawing. However, for the ESD symbol shown in Figure 500-1, only that symbol shall be used in non-text applications.

502. Item replacement notations.

502.1 Interchangeable items. When an item is replaced by another existing or new item, which is physically and functionally interchangeable and intended for stocking as a fielded replacement, the note “INACTIVE FOR NEW DESIGN AND PROCUREMENT, USE INTERCHANGEABLE PART NO. 1234...”, shall be applied over, or as near as practicable to, the title block of the drawing for the replaced item, as shown in Figure 500-2 and in accordance with 502.4. The new item will replace the old in all present and future applications. The addition of the note constitutes a change; therefore, an applicable entry in the revision block in accordance with Chapter 600 is required.

502.2 Noninterchangeable items. When an item is to be replaced by another existing or new item which provides a design improvement but is not interchangeable, the note “INACTIVE FOR NEW DESIGN, SEE NONINTERCHANGEABLE PART NO. 1246...”, shall be applied over, or as near as practicable to, the title block of the drawing for the replaced item as shown in Figure 500-3 and in accordance with 502.4. The new item will replace the old item only in new design work. The old item will continue to

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CHAPTER 600

INTERIM NOTICE I(AR)

REVISION OF ENGINEERING DRAWINGS

600 General. This chapter covers methods for revising engineering drawings and for identifying and recording revisions on original drawings.

601 Revision methods. Revisions shall be made by erasure, crossing out, addition of information or by redrawing.

601.1 Change in dimensions. In general, any change in a dimension of a part should also be made to scale on the affected portion of the delineation. However, for manually maintained drawings, it is permissible to leave the delineation unchanged when the new proportion of the part is not noticeably different from the original one. If change to scale is not made, the practice outlined in ANSI Y14.5M (for out-of-scale dimensions) shall be followed. If the drawing is redrawn, delineation shall be made to scale. Where the product definition is on an interactive computer graphics system the scale of the feature and dimension shall be maintained.

601.2 Crossing out. When the crossing-out method is used, a series of parallel lines shall be placed on the face of the drawing. The superseding data, if any, or reference to its location shall be placed near the portion crossed out and shall be indicated by a revision letter. The crossing-out method is applicable to manually prepared drawings only.

601.3 Drawing practices. When revising an existing engineering drawing, the graphic symbols, designations, lettering style and size, material (lead/ink) and method of application and drawing practices (such as line width) used in creating the original drawing format shall be followed unless otherwise directed by the design or procuring activity. When a drawing is being revised and does not reference the dimensioning and tolerancing standard or applicable issue, a determination of the applicable standard or issue shall be made (the matrix depicted in Appendix C may be used as a guide), and the proper standard then specified in the general notes and recorded as a change in the revision block or in the applicable change authorization document.

602 Identifying revisions on drawings.

602.1 Identifying revision locations. The revision locations on the drawing shall be identified by one of the following methods:

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- a. Zone in the zone column within the revision block.
- b. Revision authorization document referenced in the description block.
- c. Revision symbols on the field of the drawing.
- d. Combinations of (a), (b), and (c) as required for clarity.

602.2 Revision symbols. Revision symbols shall not be used on drawings in bookform, master-artwork of undimensioned drawings and schematic or wiring diagrams where the use of such symbols may conflict with other symbols as used on these kinds of drawings.

602.3 Revision letters. Upper case letters shall be used in alphabetical sequence. The letters "I", "O", "Q", "S", "X" and "Z" shall not be used. When revisions are numerous enough to exhaust the alphabet, the revision following "Y" shall be "AA", and the next "AB", then "AC", etc. Should "AA" to "AY" be exhausted, the next sequence shall be "BA", "BB". Revision letters shall not exceed two characters. Release (initial issue) of a drawing does not constitute need for a revision letter and may be indicated by the use of a dash (-). See Figure 500-6.

602.4 Multiple Changes. All changes to a drawing incorporated at one time shall be identified by the same revision letter if the revision letter is assigned at the time the changes are incorporated. The changes may be numbered sequentially to permit ready identification of a specific change. In this case the appropriate sequence number will appear as a suffix to the revision letter in the field of the drawing. Authorized change documents that are assigned individual revision letters shall be incorporated individually as separate revisions (in proper sequence) to the drawing.

602.5 Additions. When a multi-sheet drawing is revised to add a new sheet(s), the note, "THIS SHEET ADDED", shall be placed in the revision block of the new sheet(s), in addition to other notations. See FIGURE 600-1. If a revision block is not included on the new sheet, the indication that a new sheet was added to the drawing shall be recorded on sheet 1. See 604.2.

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 PICATINNY ARSENAL, NEW JERSEY 07806-5000

REV DATE 730111
 REVISION LETTER P
 SHEET 1

PART LIST PL 10513599 CAGE C 96906 CONTRACT NO
 DOCUMENT PART NUMBER F 10513599
 BODY ASSEMBLY
 CHANGE CONTROL NUMBER A5M2521 AUTHENTICATION ORIG DATE 640620

FIND NO	QTY REQ	UNIT MEAS	CAGE CODE	PART OR IDENTIFYING NO	DRAWING SIZE	DOCUMENT NUMBER	NOMENCLATURE OR DOCUMENT TITLE	SUPPL LIST	NOTES
	1			7649178	B	7649178	PLUG	X	HCP
	2			7649181	B	7649181	WASHER		
	1			7649182	A	7649182	WASHER	X	

TOTAL NUMBER OF SHEETS 1

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 ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
 PICATINNY ARSENAL, NEW JERSEY 07806-5000

REV DATE 730111
 REVISION LETTER P
 SHEET 1

PART LIST PL 10513599 CAGE C 96906 CONTRACT NO
 DOCUMENT PART NUMBER F 10513599
 BODY ASSEMBLY
 CHANGE CONTROL NUMBER A5M2521 AUTHENTICATION ORIG DATE 640620

FIND NO	QTY REQ	UNIT MEAS	CAGE CODE	PART OR IDENTIFYING NO	DRAWING SIZE	DOCUMENT NUMBER	NOMENCLATURE OR DOCUMENT TITLE	SUPPL LIST	NOTES
	1			7699178	B	7699178	PLUG	X	HCP
	2			7849184	B	7849184	BOLT		
	2			7459182	A	7459182	PLUG	X	

FIGURE 700-2. PL generated from digital data

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PARTS LIST		1. DESIGN ACTIVITY		1A. CONTRACT NO		2. CAGE CODE CURRENT ORIGINAL		3. ORIG DATE (YR-MO-DY)		4. PL	
5. LIST TITLE:						6. AUTHENTICATION			7. SHEET OF SHEETS		
									8. DWG NO.		
9. FIND NO.	10. QTY REQD	11. CAGE CODE	12. PART OR IDENTIFYING NO.	DRAWING/DOCUMENT		15. NOMENCLATURE OR DESCRIPTION			16. SUPPL LIST	17. NOTES	
				13. SIZE	14. NUMBER						
18. LTR	DESCRIPTION	DATE (YR-MO-DY)	APPD	18. LTR	DESCRIPTION	DATE (YR-MO-DY)	APPD	18. LTR	DESCRIPTION	DATE (YR-MO-DY)	APPD

FIGURE 700-3. Manually prepared PL

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40.1.6 Location of security markings on associated lists. Security classification shall be at the top and bottom of the list as illustrated in Figures B-4 and B-5.

CLASSIFICATION												
PARTS LIST			1. DESIGN ACTIVITY				2. CAGE CODE CURRENT ORIGINAL		3. ORIG DATE (YR-MO-DY)		4. PL	
5. LIST TITLE						6. AUTHENTICATION			7. SHEET OF SHEETS			
8. DWG NO.												
9. FIND NO.	10. QTY REQD	11. CAGE CODE	12. PART OR IDENTIFYING NO.	DRAWING/DOCUMENT		15. NOMENCLATURE OR DESCRIPTION	16. SUPPL LIST	17. NOTES				
				13. SIZE	14. NUMBER							
						SECURITY NOTATIONS						
18 LTR	DESCRIPTION	DATE (YR MO DY)	APPD	18 LTR	DESCRIPTION	DATE (YR MO DY)	APPD	18 LTR	DESCRIPTION	DATE (YR MO DY)	APPD	

CLASSIFICATION

FIGURE B-4. Location of security markings on associated lists.
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CLASSIFICATION

U.S. ARMY
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 PICATINNY ARSENAL, NJ 07806-5000
 CURRENT CAGE CODE 19200 - ORIGINAL CAGE CODE 19207

PARTS LIST PL-10513599
 DOCUMENT PART LIST F-10513599
 BODY ASSEMBLY
 CHANGE CONTROL 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	DOCUMENT NUMBER	NOMENCLATURE OR DOCUMENT TITLE	SUPL. LIST
	1			7649178	B	7649178	PLUG	
	2			7649181	B	7649181	WASHER	
	1			7649182	A	7649182	WASHER	
	2			7688718	C	7688718	LENS, OBJECTIVE	

SECURITY
 NOTATIONS

CLASSIFICATION

FIGURE B-5 Location of security marking on digital data generated associated.

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40.1.7 Location of security markings on drawings in book-form. Security markings shall be placed on pages containing classified information. Security notes shall be placed above the title block. Security classification shall be placed at top of pages. Place the following note on the title sheet. "TITLE SHEET IS UNCLASSIFIED WHEN SEPARATED FROM SHEETS (List all Classified Sheet No.)." See Figure B-6.

The figure illustrates the placement of security markings on drawing sheets. The left sheet is a title sheet, and the right sheet is a drawing sheet.

Left Sheet (Title Sheet):

- Top center: **CLASSIFICATION** (dashed box)
- Top left: **APPLICATION** table with columns: NEXT ASSY, USED ON.
- Top right: **REVISIONS** table with columns: LTR, DESCRIPTION, DATE, APPVD.
- Middle left: **CLASSIFICATION** (dashed box) above the text: "TITLE SHEET IS UNCLASSIFIED WHEN SEPARATED FROM SHEETS (LIST SHEET NO. OF CLASSIFIED SHEETS)".
- Bottom: Detailed title block including:
 - PMIC
 - CONTRACT NUMBER
 - CONTRACTOR
 - DESIGN ACTIVITY
 - UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES
 - TOLERANCES ON 2 PLACE 3 PLACE
 - DRAWN BY, DATE (YR-MO-DY)
 - CHECKER, ENGINEER
 - DRAWING APPROVAL, DESIGN APPROVAL
 - SIZE, CAGE CODE, SCALE, UNIT WT, SH

Right Sheet (Drawing Sheet):

- Top center: **CLASSIFICATION** (dashed box)
- Bottom center: **CLASSIFICATION** (dashed box) above the text: "SECURITY NOTATIONS".
- Bottom: Title block with columns: TITLE #, SIZE, CAGE CODE, REVISION LEVEL, SHEET.

FIGURE B-6. Location of security markings on drawing in book-form.
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40.18 Regarding 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 block in accordance with Chapter 600 is required. See Figure B-7.

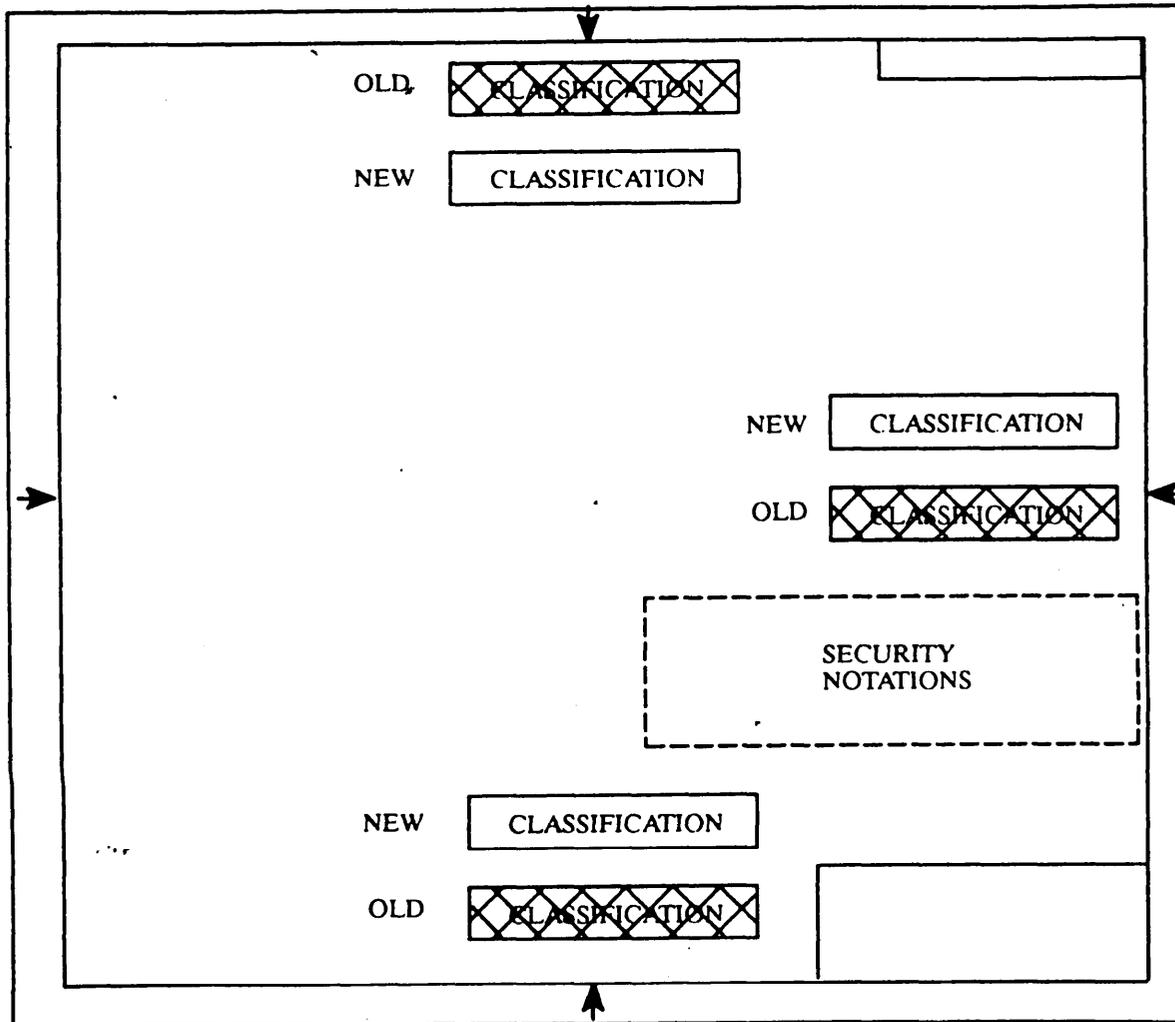


FIGURE B-7. Regarding classification location.