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A		Initial Release	B. Klatt	W. Mayer	05/03/91
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**Massachusetts Institute of Technology**  
**Kavli Institute for Astrophysics**  
**and Space Research (MKI)**  
  
**Drawings and Specifications**  
  
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## **Preface**

Revision A was the Initial Release of 99-01002 written by Brian Klatt 12/18/90 and checked by W. Mayer on 05/03/91.

Revision B issued a new format and general editorial update on 07/16/14.

## 1.0 Scope

This procedure establishes the general standards and conventions used by MIT/MKI personnel for the preparation of engineering drawings and procurement specifications.

## 2.0 Applicable Documents

The following documents form a part of this procedure as defined herein:

<b>Specifications</b>	<b>Titles</b>
MIL-STD-12	Abbreviations for use on Drawings, Specifications, Standards, and in Technical Documents

MIL-STD-490	Specification Practices
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### **MIT Documents**

64-02014	Configuration Management Plan
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37-11001.11	Configuration Management Plan
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### **Industry Standards**

ANSI Y14.1-1980	Drawing Sheet Size and Format
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ANSI Y14.5M-1982	Dimensioning and Tolerancing
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ANSI Y14.15-1966	Electrical and Electronic Diagrams
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ANSI Y32.2-1975	Graphic Symbols for Electrical and Electronic Diagrams
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## 3.0 Engineering Drawings - Mechanical

### 3.1 Format

The basic format of all Mechanical Engineering Drawings shall conform to the requirements detailed in ANSI Y14.1-1980. This generally refers to the title block, its location, content, size, line width, and lettering, and is applicable to sheet drawings as well as roll drawings. Format also includes drawing arrangements, lettering, and zoning.

### 3.2 Sheet Size

Standard drawing sheet sizes shall conform to table 1 of ANSI Y14.1-1980, allowing for the capability of the Computer Aided Design (CAD) driven plotter. In the case of the larger drawings, the sheet size is standard but the area inside the borders is very slightly undersize.

### 3.3 Dimensioning and Tolerancing

Dimensioning and tolerancing shall clearly define the engineering intent. Each dimension shall have a tolerance, except for those dimensions specifically identified as reference, maximum, minimum, or stock (commercial size stock). The tolerance may be applied directly to the dimension (or indirectly in the case of basic dimensions), indicated by a general note, or located in a supplementary block

of the drawing format. All dimensioning and tolerancing shall conform to ANSI Y14.5M-1982.

## **4.0 Engineering Drawings - Electrical**

### **4.1 Electrical and Electronic Diagrams**

The standardized drawing practices of ANSI Y14.15-1966 shall apply to all flight hardware schematic diagrams.

### **4.2 Graphic Symbols**

Graphic symbols used in electrical and electronic diagrams shall conform to IEEE Standard 315 and ANSI Y32.2-1975.

## **5.0 Procurement Specifications**

### **5.1 Style and Format**

The style and format of procurement specifications shall conform to paragraph 3.0 of MIL-STD-490.

### **5.2 Abbreviations**

Abbreviations used in procurement specifications shall conform to MIL-STD-12.

### **5.3 Content**

The content of procurement specifications shall conform to paragraph 4.0 of MIL-STD-490.

## **6.0 Numbering and Filing of Engineering Drawings**

### **6.1 AutoCAD Drawings**

Drawings Generated with AutoCAD are filed under the MKI home Directory. The file name is of the form bccdd\_eeffSk.rn and is write-protected from all access but that of the configuration officer.

- a. The first digits (b through f in the example above) are the same as those in the Configuration Data Base. The project designator is missing, and the dot is replaced with an underscore.
- b. In the case of a multi-sheet drawing, a capital "S" followed by a page number "k" precedes the .rn suffix.
- c. The suffix contains the revision number "n" of the drawing as an uppercase alphanumeric, e.g. 01 of C. Typically, all revisions, past as well as current, are kept on file.