Identify Lettering Techniques and ASME Standards

AS A DRAFTER, you can develop your own variation on the standards and create your own style. However, consistency is important. This can be accomplished by following some general guidelines and techniques used to create compositions. Since the invention of the computer, manual lettering is becoming a lost art form. Most CADD lettering is based on the variations and techniques that manual lettering created. With CADD, text can be created and altered easily, and it has a much larger range of possibilities.

Objectives:

1. Identify different lettering styles.
2. Describe lettering techniques and standards.

Key Terms:

Ames Lettering Guide
attributes
composition
font
guidelines
Roman
sans serif
serifs
single stroke
text

Different Lettering Styles

There is always some information on drawings that must be communicated with lettering. For example, detailed specifications and titles cannot be shown graphically, so drafting professionals use many styles of lettering. Basically, two ways to create lettering exist: freehand lettering and the computer.

FREEHAND LETTERING

There are essentially two ways lettering can be positioned: vertically and inclined.

Vertical Lettering

Vertical lettering consists of vertical, upright letters. It is the standard lettering used in mechanical drafting. Two types of vertical letters exist: those composed of straight lines (e.g., E and F) and letters containing arcs (e.g., C and D).

Inclined Lettering

Inclined lettering has a general slant or slope, with letters usually inclined at 68°. The **Ames Lettering Guide**, a device for making lettering guidelines, has one edge with a 68° slant. This type of lettering is commonly found in structural drafting.

Types of Cases in Lettering

There are two different cases in lettering: uppercase and lowercase. Lower case letters are rarely used in mechanical drafting. In some cases, large and small letters are used. On civil drawings and maps, however, lowercase lettering is used at times.

Format

Single-stroke Gothic lettering has become the standardized lettering format. It is a modified form of the Gothic letter font. A **font** is a complete set of letters and numbers of a specific style. If it is a **single stroke**, each letter consists of a single straight or curved line element. This makes each letter easy to draw and to read. Vertical, uppercase Gothic letters are the industry standard. Yet inclined and lowercase Gothic letters are also used.

Architectural Lettering

Architectural styles of lettering are much more varied than mechanical lettering styles. Neatness and legibility are essential when using this lettering style.

FIGURE 1. All of these letters share the same font style.

COMPUTER LETTERING

Computer-aided drafting and design (CADD) lettering is called **text**. The text can have a whole range of **attributes**, which pertain to all the qualities of an object or text. Attributes can include color, style, and size. In drafting, attributes can include how the text spaces itself from objects and how paragraphs are formed.

CADD software allows titles, notes, and dimensioning information to be added to drawings quickly and easily. In freehand lettering, this can become a tedious task. Yet when the correct text settings and drafting practices are used, text created by CADD has many advantages. For

instance, it has a consistency of character size and shape. In addition, you can use many text styles in the display of information and add symbols containing complex shapes to lines of text. It allows for easy modification and reproduction. It increases accuracy, speed, and legibility. CADD also has the availability of specialized tools and options, such as spell-checking.

Lettering Techniques and Standards

Part of CADD success requires knowledge of lettering techniques and standards. Numerous techniques are used for various purposes, so knowing what is expected is crucial.

LETTERING

Lettering is more like freehand drawing than writing. Therefore, lettering ability has little relationship to writing ability. The fundamental drawing strokes and their directions are basic to lettering. Horizontal strokes are drawn left to right. In contrast, vertical, curved, and inclined strokes are drawn downward.

Guidelines

Straight and even letters of uniform height are more desirable than letters with varying heights. To draw letters consistently, guidelines are used. **Guidelines** are very lightly drawn horizontal lines equal to the height of letters in distance apart. When using guidelines, it is important to extend each letter directly to the guidelines. If a letter or two extends beyond or falls short of the guideline, it creates an uneven look, making it difficult to read. The Ames Lettering Guide is commonly used to make guidelines.

Spacing of Letters

With the spacing of letters, the background areas between letters should be approximately equal. The actual distance between them does not need to be equal because this would create small and large gaps between some letters. For example, OQ spaced the same as JP would not read well. Good composition is required. **Composition** is the process of placing letters within words and words within sentences in a unified and artistic manner. As a general rule, curved letters should be placed closer together, and straight letters should be placed further apart.

Titles and Related Information

The title and related information are usually lettered in title boxes or title strips. The main title of the drawing is often centered in a rectangular space at the lower right corner. Centering can be performed easily in CADD. When hand lettering is used, the title can be arranged symmetrically around an imaginary centerline. This allows the title to be centered in the space.

The most important words in the title need to stand out. These words are usually given prominence by making the lettering larger, bolder, or both.

LETTERING STANDARDS

Lettering on drawings should be legible and easy to create. The font style used should be acceptable for freehand or for computer lettering. Many modern styles of letters originated from the design of Roman capital letters. A **Roman** letter is any letter with wide downward strokes, thin connecting strokes, and ends terminating in spurs (**serifs**). The serifs were created by the specific tools used to form the letter. The advent of technical drawing in the late 19th century created the need for a simplified, legible alphabet. Today, single-stroke Gothic **sans serif** (without serifs or spurs) is widely used because of its legibility.

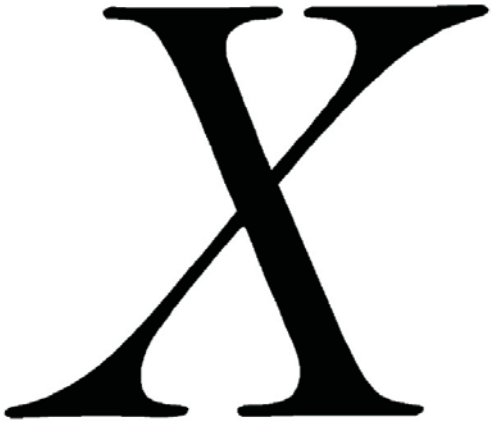

FIGURE 2. An example of a Roman-style letter.

American National Standards Institute

The American National Standards Institute (ANSI) established the standard for lettering in 1935. This standard is now conveyed by the American Society of Mechanical Engineers (ASME). It is located in its document *Line Conventions and Lettering*.

The minimum recommended lettering size on engineering drawings is 0.12 in. (3 mm). All notes, dimension numerals, and other lettered information should be the same height—with the exception of titles, drawing numbers, section and view letters, and other captions, which should have a height of 0.24 in. (6 mm).

Summary:

There is always some information on drawings that must be communicated with lettering. There are essentially two ways lettering can be positioned: vertically and inclined. There are two different cases in lettering: uppercase and lowercase. Single-stroke Gothic lettering has become the standardized lettering format, typically in uppercase. Computer-aided drafting and design (CADD) lettering is called text. With CADD, text can be created and altered easily.

Lettering on drawings should be easy to create and should be legible. To draw letters consistently, guidelines are used. With regard to the spacing of letters, the background areas between letters should be approximately equal. Titles and related information are usually lettered in title boxes or title strips. The American National Standards Institute (ANSI) has established the standard for lettering.

Checking Your Knowledge:

1. What are the two ways in which lettering can be positioned?
2. What is the standardized lettering format?
3. What is used to draw consistent letters?
4. What is required to avoid bad letter and word spacing?
5. What is the minimum size text to use on engineering drawings?

Expanding Your Knowledge:

Plan a trip to a local engineer's, architect's, or mechanical engineer's office. Ask if he or she will let you look through some drawings to see different lettering techniques. Older offices will likely have full sets of drawings all produced by hand. The sets can be educational to see, and you can learn a lot about lettering and techniques. Prepare a list of questions beforehand so you are ready to have a conversation with the drafter.

Web Links:

Drafting Occupations
http://www.bls.gov/oco/ocos111.htm

Frequently Asked Questions About Fonts
http://nwalsh.com/comp.fonts/FAQ/

Lettering and the Ames Lettering Guide
http://academics.triton.edu/faculty/jhalpin/ARC109/lectue_week_two.html