Design Drafting Lectures
Lecture 5

**Drafting Media (Paper) and Lettering**

In this lecture we will take a break from talking about drafting equipment and concentrate on the subjects of drafting media (paper) and lettering.

**Papers and Films:**

1. Vellum is drafting paper made of 100% rag (organic fiber) that is specially designed to accept pencil or ink.

2. Lead on vellum is probably the most common combination used in the drafting industry today

**Polyester Film:**

1. Polyester film also known as Mylar is a plastic “stable base” material that offers excellent drafting uses. Drawing on Mylar is best accomplished using ink or special polyester leads. Do not use regular graphite leads as they will smear easily.

2. Mylar is available with a single or double mat surface. Mat is surface texture. When using Mylar you must be very careful not to damage the mat by erasing. Erase at right angles to the direction of your lines and do not use too much pressure. Once the mat surface is destroyed and removed, the surface will not accept ink or pencil. Also oil from your hands can cause your pen to skip across the material.

3. Mylar is much more expensive than vellum; however, it should be considered where excellent reproductions, durability, dimensional stability and eras ability are required of original drawings.

**Sheet Sizes, Title Block and Borders:**

All professional drawings have title blocks. Standards have been developed for the information put into the title block and on the surrounding sheet adjacent to the border so that the drawing will be easier to read and file than drawings that do not follow a standard format.

**Standard sheet sizes are as follows:**

<table>
<thead>
<tr>
<th>Mechanical:</th>
<th>Architectural:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A – 8.5” x 11”</td>
<td>A – 9” x 12”</td>
</tr>
<tr>
<td>B – 11” x 17”</td>
<td>B – 12” x 18”</td>
</tr>
<tr>
<td>C – 17” x 22”</td>
<td>C – 18” x 24”</td>
</tr>
<tr>
<td>D – 22” x 34”</td>
<td>D – 24” x 36”</td>
</tr>
<tr>
<td>E – 30” x 42”</td>
<td>E – 36” x 48”</td>
</tr>
</tbody>
</table>
Sheet Layouts

A convenient code to identify American National Standard sheet sizes and forms suggested by the authors for title, parts or material list, and revision blocks, for use of instructors in making assignments, is shown here. All dimensions are in inches.

Three sizes of sheets are illustrated: Size A, Fig. I, Size B, Fig. V, and Size C, Fig. VI. Metric size sheets are not shown.

Eight forms of lettering arrangements are suggested, known as Forms 1, 2, 3, 4, 5, 6, 7, and 8, as shown below. The total length of Forms 1, 2, 3, and 4, may be adjusted to fit Sizes A4, A3, and A2.

The term layout designates a sheet of certain size plus a certain arrangement of lettering. Thus Layout A-1 is a combination of Size A, Fig. I, and Form 1, Fig. II. Layout C-678 is a combination of Size C, Fig. VI, and Forms 6, 7 and 8, Figs. IX to XI inclusive. Layout A4-2 (adjusted is a combination of Size A4 and Form 2, Fig. III, adjusted to fit between the borders. Other combinations may be employed as assigned by the instructor.

**Fig. I** Size A Sheet (8.50" x 11.00")

**Fig. II** Form 1. Title Block

**Fig. III** Form 2. Title Block

**Fig. IV** Form 3. Title Block

**Fig. V** Size B Sheet (11.00" x 17.00")

**Sheet Sizes**

**American National Standard**

A - 8.50" x 11.00"
B - 11.00" x 17.00"
C - 17.00" x 22.00"
D - 22.00" x 34.00"
E - 34.00" x 44.00"

**International Standard**

A4 - 210 mm x 297 mm
A3 - 297 mm x 420 mm
A2 - 420 mm x 594 mm
A1 - 594 mm x 841 mm
A0 - 841 mm x 1189 mm
(25.4 mm = 1.00")
Zoning:

Some companies use a system of numbers along the top and bottom margins and letters along the left and right margins called zoning. Zoning allows the drawing to read like a road map.
Title Blocks:

The following is standard information that is found inside a title block:

- Company name
- Confidential statement
- Unspecified dimensions and tolerances
- Sheet size
- Drawing number
- Part name
- Material
- Scale
- Drafter signature
- Checker signature
- Engineer signature
- Revision Column
- Zoning
**Lettering:**

Information on drawings that cannot be represented graphically by lines may be presented by lettered dimensions, notes, and titles. It is extremely important that these lettered items be exact, reliable, and entirely legible in order that the user may have confidence in them and never have any hesitation as to their meaning. Poor lettering will ruin an otherwise good drawing.

1. The type of lettering recommended by ANSI for mechanical drafting is single stroke gothic (vertical freehand lettering).

2. The minimum recommended lettering size on engineering drawings is .125 inches (1/8”).

3. All dimension numerals, notes and other lettered information should be the same height except for titles, drawing numbers and other captions. Titles and subtitles, for example, may be .25 inches (1/4”) high.

4. The composition or spacing of letters in words and between words in a sentence should be such that the individual letters are uniformly spaced with approximately equal background areas. This requires the letters such as I, N or S be spaced slightly father apart from their adjacent letters than L, A, or W.

5. A minimum recommended space between letters in words is approximately .0625 inches (1/16”).

6. The space between words in a note or sentence should be about the same at the height of the letters. The horizontal space between sentences in a note or paragraph should be equal to twice the height of lettering.

7. All notes should be lettered horizontally on the sheet.

8. Most industries prefer that drafters produce lettering that looks the same form one drawing to the next. Also, when drawing changes are made, the individual making the change should attempt to match the lettering on the original drawing.

9. Always use an AMES lettering guide to draw horizontal guidelines that are spaced equal to the height of the letters.

10. Use 2H, H, or F pencils for lettering. Try them all, but use the one that gives you the best results.

11. Many drafters prefer using a .5 mm automatic pencil for lettering.

12. Place a clean paper under your hand when lettering to prevent smudging.

13. As a rule of thumb, curved letters can be placed close together and straight letters should be placed further apart.
14. When making curved letters, push the guidelines; that is, let the thickness of the stroke go slightly beyond the guideline. This technique will help make the curved letters appear the same height as the other letters.

15. The tops of letters and numbers such as B, C, E, F, G, K, R, S, X, Z, 2, 3, 5, 6, 8, and 9 should be drawn smaller so the letters do not appear top heavy.

16. If your letters are wiggly or if you are nervous, try pressing hard to make you lines straighter. If you are pressing too hard, try to relax the pressure. Also try making each letter as rapidly as possible. This tends to eliminate wiggly letters. If your lead is too hard, wiggly letters could result; try a softer lead.
Approved Gothic lettering for engineering drawings

Spacing of lettering

| GOOD SPACING OF CHARACTERS AND EVEN LINE WEIGHT PRODUCE CONSISTENTLY GOOD RESULTS ON MICROFILM | POORLY SPACED AND FORMED, OR CRAMPED LETTERING MEANS POOR RESULTS IN MICROFILMING |
| PREFERRED (OPEN-TYPE LETTERING) | UNDESIRABLE (CRAMPED LETTERING) |

ABCDFGHILMNOPQRSTUVWXYZ
1234567890

INCLINED LETTERS 3

ABCDFGHILMNOPQRSTUVWXYZ
1234567890

VERTICAL LETTERS
Mechanical pencil with soft, slightly rounded lead point for lettering. Many professionals choose the 0.5 mm automatic pencil with a soft lead.

Recommended strokes for vertical uppercase gothic letters with straight elements

Place clean paper under your hand when lettering.
Appearance of curved letters

Spacing of decimal point in numerals

Fraction styles

Curved letter composition

Straight letter composition
Spacing of letters, words, and notes

**AMES Lettering Guide:**

1. The numbers 2-10 represent 1/32” increments used in conjunction with the middle column of equally spaced holes.

2. The holes off the disk are equally spaced every 1/8”

3. The 2/3 and 3/5 marks are for capital to lower case letters used in conjunction with the 1/8, 1/16, 3/32 marks on the right side of the lettering guide and the sets of (2) sets of 3 holes.

4. The decimal numbers are to be lined up with the M mark and are equivalent to text heights in mm.

5. The lettering guide may be inclined for 68° inclined guidelines.

6. A template is provided for making the ANSI control surface finish mark, new style finish mark.
Figure 3–78. Ames lettering guide. Courtesy Olson Manufacturing Company, Inc.

Making .125 and .25 inch guide lines