

CHAPTER 2

Architectural Drafting Equipment

CHAPTER RATIONALE

Architectural drafting requires a variety of tools. Drafters need to thoroughly understand the types of equipment at their disposal and their appropriate applications. This chapter describes the equipment typically used in architectural drafting: pencils and leads, pens and inks, eraser types and accessories, drafting instruments, drafting machines, scales, and protractors. Scale notation and the application of various scales in design are reviewed, as is the use of metric linear units in architecture.

EDUCATIONAL OBJECTIVES

After studying the content in Chapter 2, students will be able to:

- identify the basic equipment necessary for architectural drafting;
- describe the proper usage of drafting tools;
- distinguish the two basic pencil types, as well as understand the usage of different lead thicknesses and grades;
- identify the function of technical pens;
- differentiate between eraser types, and erasure techniques;
- describe the types and usages of various drafting instruments, including: compass, dividers, parallel bars, triangles, architectural templates, and irregular curves;
- describe the arm and track drafting machines and their operation;
- distinguish between scale types and notations;

- utilize an architect's, engineer's, and metric scale to properly read a drawing; and
- describe the standard usage of metric (SI) linear units in architectural drafting.

TEACHING HINTS

Exhibiting the Equipment

Before asking students to buy equipment for your drafting course, it is often helpful for them to see the equipment demonstrated. Even in a computerized world, understanding basic manual drafting equipment is important. Students can be bewildered by the vast array of items found in a good art and architecture supply store. Bring in the drafting tools presented in this chapter. Show them to the students; discuss advantages and disadvantages of the various tools. The PowerPoint presentation can assist during the demonstration as students can see the equipment being used and an explanation of it on the projection screen. Also, it may be appropriate to discuss the following:

- Emphasize the need to purchase quality tools for accuracy and durability. The most expensive drafting tools, however, are not usually necessary. Also, do not assume that the largest possible triangle, parallel-rule, or other piece of drafting equipment is the most versatile; it is not unusual for many drafters and architects to often use their smallest triangle and scales.
- Ask and demonstrate to students how to keep their equipment clean. Dirty drafting tools smudge drawing surfaces.
- Warn students not to misuse tools. Using parallel rules, plastic triangles, and scales as cutting edges, for example, will ruin these instruments.

Lead Graded and Line Weights

Students are often required to purchase a variety of lead grades. The importance of line weights in the field of drafting cannot be emphasized enough. Spend some time discussing the types of lead grades that are available. If possible, show your class drawings in both pencil and ink (hand-drafted and CAD-plotted) and specifically point out a variety of different line weights. Demonstrate how to use both a mechanical and automatic pencil and discuss the advantages and disadvantages of each.

Presenting Scales

It is important to be clear when explaining scales. It is not uncommon for student's to be unable to read a standard ruler; asking them to read various scales, particularly architect's scales, can be confusing. Since all working drawings need to be drawn to scale, it is crucial that each student understand their usage. Spend some time with overhead transparencies and handouts testing your class's ability to read a variety of scales. Consider pairing students together who demonstrate proficiency with those who are struggling with the scales. The more proficient student may demonstrate the concepts in a unique way to the other student and thereby improving both of the students' abilities.

While covered at length in other parts of the book, briefly describe the scales conventionally used for a variety of drawings. Using standard scale conventions makes it easier for other people—including clients, builders, shop fabricators, and building officials—to interpret the drawings prepared by drafters.

Using the Metric System

Some emphasis should be placed on metric units and drafting. While Canadian students are usually comfortable with metric units, most Americans are less familiar with SI linear measurements. Metric units are frequently perceived by many students to be difficult to

use when actually, they are easier to use than English units. Also, many architectural firms design projects for sites abroad. The ability to work with both measurement systems constitutes good business skills.