Unit 13: Dimensioning a Drawing

Overview

Dimensioning has a unique feel in each of the various disciplines that utilize AutoCAD. In this unit, dimensioning as it relates to architectural drafting will be discussed. This unit is an introduction to architectural dimensioning standards.

Objectives

- Understand the use of standards.
- Create and utilize dimensioning standards.
- Understand the use of linear and radial dimensioning in creating architectural drawings.

Introduction

Dimensioning is perhaps one of the most frustrating tasks for a new architectural AutoCAD user. While AutoCAD does provide many powerful commands, sometimes the plethora of commands is overwhelming to the new student. Add to this the fact that AutoCAD does not inherently adhere to any known standard and there is still quite a bit of user decision making, AutoCAD can be “down-right stubborn” when it comes to the simplest of dimensions. This unit will present examples of the use of the most common dimensioning commands in architectural drafting.

Section 1: Dimensioning Basics

In the area of architectural drafting there are certain standards that should be followed. The American Institute of Architects (AIA) is one organization that attempts to provide standards for architectural drafting. This organization develops and adopts standards that ensure drawing compatibility among architectural firms. Many of these standards are based on the American National Standards (ANSI) and have been adopted for use in architectural drafting. These standards address everything from sheet size to the size of the gap in a dashed line. It is imperative that every architectural draftsperson be familiar with these standards.

Architectural Standards

AIA has set forth standards that, if adhered to, allow all architectural firms to exchange drawings without the fear of interpretation error due to organization-specific techniques and symbology. It is therefore important that these standards be learned early in a career and their use refined over the years.

This unit will introduce various accepted architectural standards that should be followed. This will ensure that standards are immediately applied to architectural drawings created in AutoCAD. As you will find in our exploration of these dimensioning standards, many of the AutoCAD default values will have to be changed in order to adhere to these standards.
Creating Dimension Styles

Dimension styles allow for various dimension settings to be grouped by name. Using these styles can greatly simplify the creation of dimensions. Styles are created based on the type of drawing that is being created and there are many occasions where it is beneficial to have more than one type of style defined in a drawing. For instance, in architectural drawing there are many different drawing scales such as \( \frac{1}{4}'' = 1' \), \( \frac{1}{8}'' = 1' \), etc. Different standards are also used on architectural structural drawings than those used on residential floor plans. Instead of modifying each dimension attribute individually to match the application, two styles can be created that allow the users to quickly jump back and forth between scales.

The Customary Architectural Style

The customary architectural style uses the foot and inch as the common units of measure. These measurements are chosen over metric units because of their proliferation in the construction industry. Many drawings exist that use this system. This section will present the settings necessary in the Dimension Styles family of dialog boxes to create proper architectural dimensions. Follow these steps to create a dimension style that conforms to customary architectural standards:

- Set units to Architectural.
- Set the precision of units to 0'-0 1/16".
- Select the Dimension Style button on the Dimensioning toolbar. The Dimension Style Manager dialog box will be displayed.
- Create a new style called Arch.
- Make sure the Lines tab is selected. Ensure that the settings are the same as those found in figure 13.1.

![Figure 13.1 The Lines tab settings.](image)
Figure 13.2 The Symbols and Arrows tab settings

- Select the Text tab. Ensure that the settings are the same as those found in figure 13.3 and select OK to close the dialog box. Leave the Fit tab setting to their default.

Figure 13.3 The Text tab settings.

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Figure 13.4 The Primary Units tab settings...

**SKILL BUILDER**
Consider creating a template file that contains the architectural dimension style. You can combine this style with the layers, linetypes, and user settings from other template files. You will then have a file that automates almost all of the mundane settings that are generally necessary for creating a new architectural drawing.

While dimension styles assist in creating the majority of architectural dimensions, they cannot be used in all instances. This is where the PROPERTIES command comes into play. Use this command to make slight modifications of dimensions that do not conform to the dimension style standards that have been established. Likewise, grips provide an excellent means of modifying locations of text, distance away from another line, and gaps between extension and object lines.

**Section 3: Setting the DIMSCALE**
The DIMSCALE system variable is used to set the dimension scale. The DIMSCALE value, which can be obtained from the CAD Card, is the overall scale for the drawing. The Scale Factor for a 1/4" drawing, for example, is 48 (obtained by multiplying 12 X 4). You can set the DIMSCALE at the Command prompt or in the Fit tab of the Modify Dimension Style dialog box in the User overall scale box.
Section 2: Linear and Radial Dimensioning

Both the linear and radial dimensions were described in detail in the main text. This section will briefly address situations where each type of dimension would be used on an architectural drawing. If a concept or command is unfamiliar, you should consult the main text for more information so that each of these examples is understood.

Linear Dimensions

Linear dimensions are used to measure distances along the horizontal or vertical axis. The majority of all architectural dimensions will be linear. Look though the drawings presented in this workbook. Notice that almost all dimensions are horizontal and vertical.

Aligned Dimensions

Aligned dimensions are any dimensions that are not vertical or horizontal. Aligned dimensions are very useful when walls, cabinets, or other objects need to be dimensioned.

Continued Dimensioning

Both the baseline and continue dimensions allow the creation of continued dimensions. Both of these are necessary to properly note architectural drawings. Continued dimensions are frequently used to show the distance between walls, doors, and windows while baseline dimensions can be used to provide the overall dimensions of the floor plan.