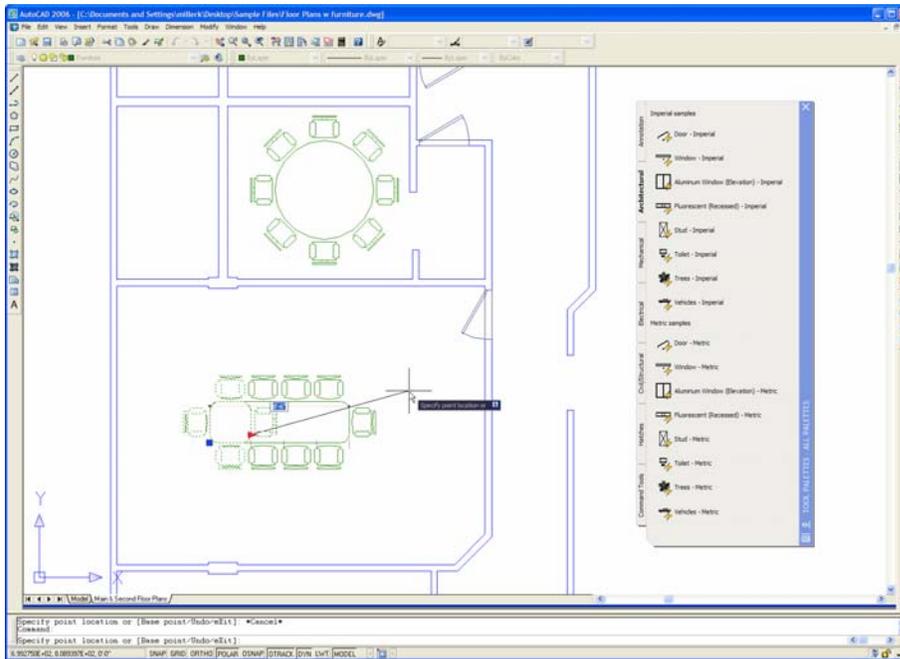


AutoCAD®  
2006

# Preview Guide



Migration is easy, deployment is simple, and intuitive new features make learning a snap. New drafting and annotation tools such as Dynamic Blocks and enhanced hatching eliminate the need for time-consuming workarounds. These new features in conjunction with powerful existing tools like the Sheet Set Manager and tool palettes offer a complete set of tools to manage everything from simple to complex projects. AutoCAD® 2006 works the way you've always wanted and brings a new level of efficiency and effectiveness to your everyday tasks.

Autodesk®

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# Create

## Manipulating Block Instances

Blocks, an essential part of nearly any drawing, are used to represent real-world objects. Different variations of real-world objects can require you to define just as many variations of blocks. Even with hundreds of block definitions, you may still have to tweak the appearance of a particular block instance by exploding the block and editing the geometry. This solution can result in excessively large, inconsistent, and inaccurate drawings.

In AutoCAD 2006, powerful new Dynamic Block functionality enables you to edit the appearance of block instances without having to explode them. You can manipulate a Dynamic Block instance during and after inserting it into a drawing.

### Choosing from multiple visibility options

Dynamic Block definitions can contain multiple representations of a particular symbol. Upon insertion, you can choose which representation to use. For example, a single Dynamic Block definition could store multiple representations of a bed, faucet, stud, or valve.

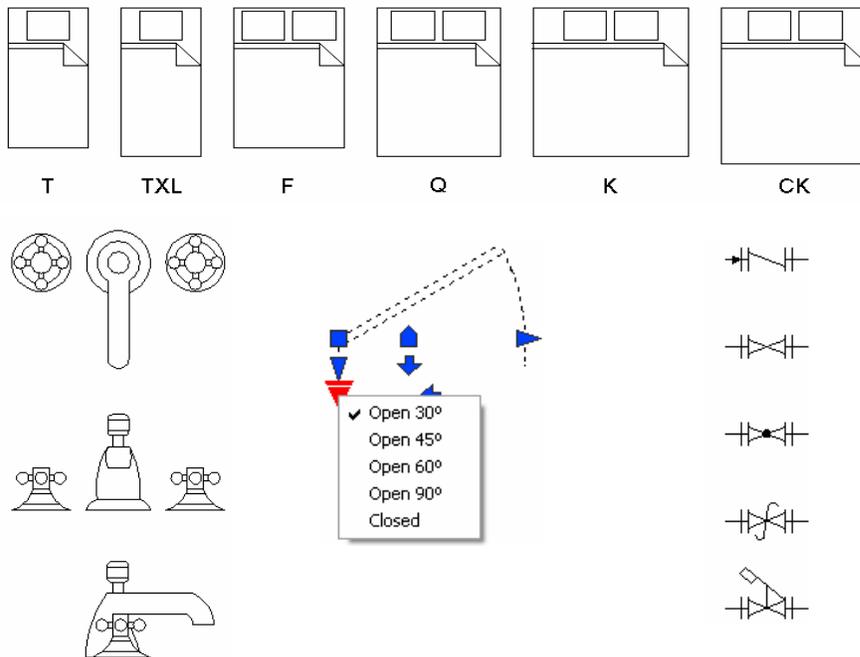


Figure 1. Multiple visibility options within Dynamic Blocks.

### Cycling through insertion points

As you insert a Dynamic Block, you can cycle through key insertion points to find the one that makes the most sense for your current situation. The ability to cycle through insertion points can eliminate the need for you to move the block after it is inserted.

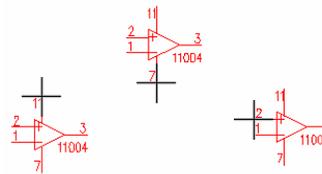


Figure 2. Multiple insertion points.

### Aligning with drawing geometry

As you move your cursor near drawing geometry, Dynamic Blocks will automatically align themselves with other objects.

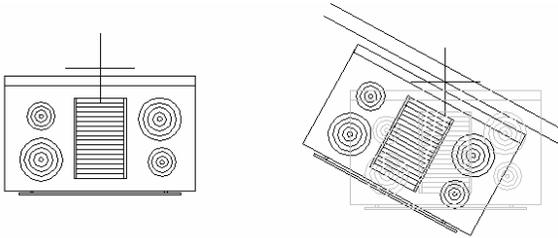


Figure 3. Automatic alignment.

### Editing block geometry

Special grips within Dynamic Blocks enable you to move, scale, stretch, and rotate, array, and flip individual block geometry. Editing blocks can be constrained to specific increments within minimum and maximum values or they can be constrained by fixed lists that define their properties. For example, you might have a bolt block, which you can stretch to a total length between 1 and 4 units. As you stretch the bolt, the length is constrained to .5 unit increments and threads are automatically added or removed as you stretch the bolt. A second example might be a callout block that includes a circle, text, and a leader line. You can rotate the leader around the circle while the text and circle remain static. A third example might be a door block. You can stretch the door width and flip the direction of the door swing.

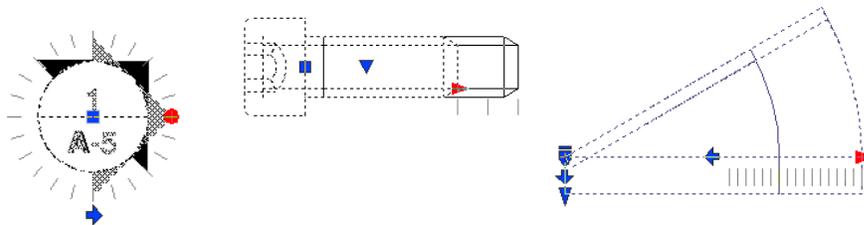


Figure 4. Editable block geometry.

## Focusing on your Design

AutoCAD 2006 offers significant improvements to the user interface. These improvements simplify your interaction with the software and enable you to stay focused on your design.

### Viewing and entering data at your point of focus

As you draw and edit objects in your drawing, you must often read and respond to prompts which appear on the Command Line. If you fail to read the Command Line, you may miss important feedback and options which may result in errors. This command line interaction, although necessary, can be distracting. You must constantly change your focus from the cursor location to the Command Line and back again. If you have ever tried to teach AutoCAD to new users, you know how challenging this can be, as you are constantly reminding them to “look at the Command Line.”

In AutoCAD 2006, new Dynamic Input settings enable you to launch commands, read prompts, and enter values right at the pointer, without diverting your attention from the

drawing editor. You can dynamically view dimension values such as length and angle as you create and edit geometry, and, using the tab key, you can toggle between values.

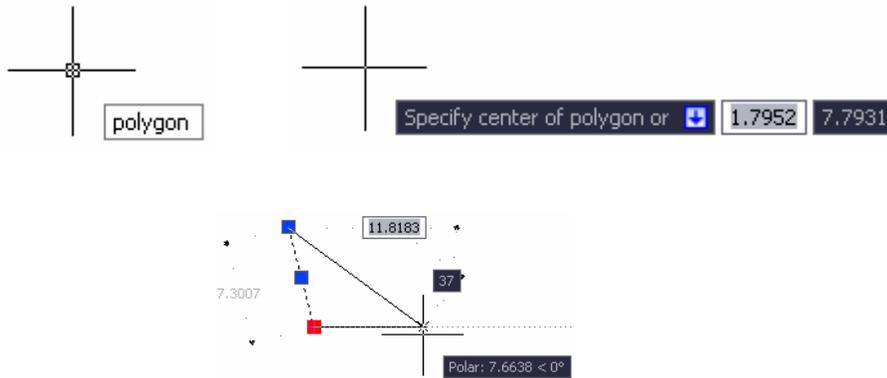


Figure 5. Dynamic Input enabled.

You can enable Dynamic Input using a new toggle on the status bar. A new tab in the Drafting Settings dialog box provides control over the format, visibility, and appearance of dynamic input functionality.

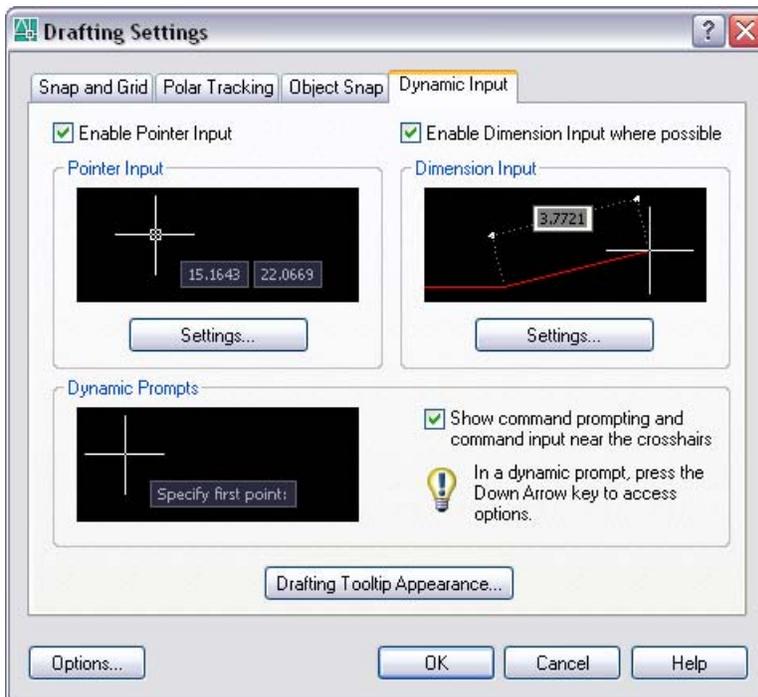


Figure 6. Dynamic Input tab.

The command line has been an essential part of AutoCAD for a very long time, and don't worry, it isn't going away. However, when using AutoCAD 2006, you'll find yourself looking at the command line a lot less often!

### Accessing commands and recent data

Some of you have been using the AutoCAD Command Line for years and you don't plan on giving it up any time soon. You know command names and can type your most frequently used commands without even thinking about it. However, those less frequently used commands may slow you down as you try to remember exactly which way to spell them. For example, is it "EATEXT" or "EATTEXT"?

AutoCAD 2006 expedites use of the Command Line by providing AutoComplete functionality. At the Command prompt, you can begin typing a system variable or

command, including ARX defined commands and command aliases and then press the Tab key to cycle through the available options. For example, type “EAT” at the command prompt and then press the Tab key, to cycle through all of the EAT (enhanced attribute) options.

As you continue to work with AutoCAD commands, you may find yourself reentering the same data values multiple times. Even if you actually enjoy typing, this repetitive data entry is inefficient and prone to error.

Reduce mistakes and save time using the new Recent Input functionality in AutoCAD 2006. You can access recently used values including, points, distances, angles, and strings by pressing the up and down arrow keys at the Command Line or by selecting Recent Input from the right-click menu. The most recently used values are context-aware. For example, when you are prompted for a distance at the Command Line, the Recent Input functionality displays previously entered distances. When at the angle prompt in the ROTATE command, you are offered previously used rotation angles. You can control the availability of the Recent Input functionality using the INPUTHISTORYMODE system variable.

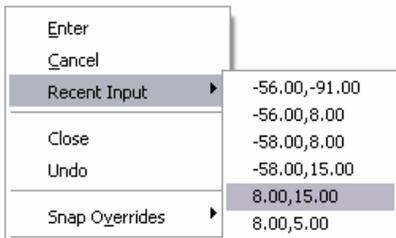


Figure 7. Recent Input menu option.

### Zooming and Panning

As you work on your designs in AutoCAD, you probably zoom and pan around a drawing hundreds of times. As you zoom, you may become disoriented, forgetting where you were or where you are going next, or you may want to quickly return to a previous view. If you have zoomed or panned many times, returning to a previous view can be cumbersome as you undo and redo multiple times.

AutoCAD 2006 offers improved zooming and panning. A new system variable, VTENABLE, enables you apply smooth transitions to changes in the display area. For example, if you perform a zoom extents with smooth view transitions enabled, you will dynamically see your display zoom out to the extents of the drawing. These smooth view transitions help you maintain your visual orientation within the drawing. To further improve the process of zooming and panning, a new option on the User Preferences tab of the Options dialog box enables you to group consecutive zoom and pan operations into a single operation. You will minimize the steps required to return to previous views, saving you time and increasing your efficiency.



Figure 8. Undo/Redo control.

### Selecting objects

Selecting objects in a drawing can sometimes be challenging. It is often a repetitive process of trial and error as you select an object, realize it is the wrong one, press the Escape (ESC) key, and try again. If the ESC key on your keyboard has worn out because of this process, you will be happy to see the new object selection enhancements offered in AutoCAD 2006. Visual cues provide dynamic feedback helping ensure that you pick the proper objects on your first try.

As you roll your cursor over an object, the object becomes highlighted, enabling you to see which object you are about to select before you actually pick it. Rollover highlighting helps you minimize selection errors and accurately predict selection functionality. An added benefit is the ability to distinguish an entire object, such as a closed polyline, from individual objects, such as line segments, without actually selecting the objects. When you select multiple objects, a new semi-transparent selection window clearly identifies the object selection area. You can modify object selection behavior using new controls on the Selection tab of the Options dialog box.

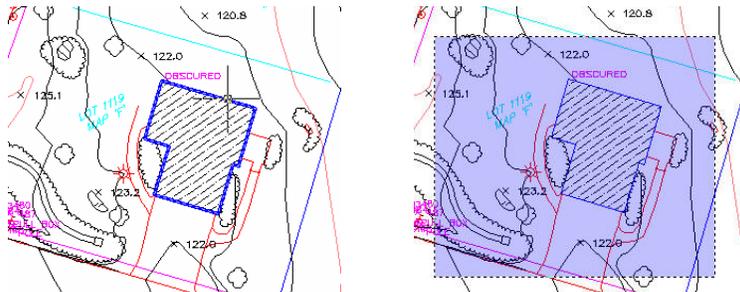
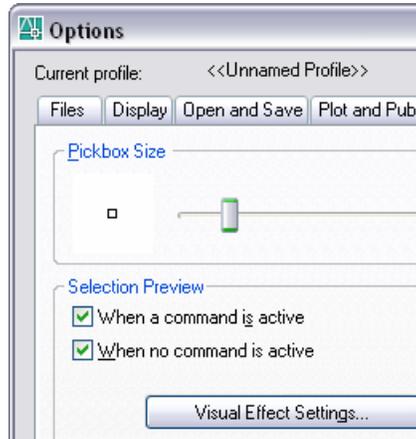


Figure 9. Rollover highlighting and selection area.

### Customizing the scale list

Drawing scale is a fundamental part of most AutoCAD drawings. Common scales are accessible from scale lists in relevant functionality throughout AutoCAD. However, depending on your discipline and geography, the default scales may not be pertinent to your work. For example, if you are a manufacturing engineer in Germany, it is unlikely that you will use the architectural imperial scales such as 1/4"=1'. However, you may require other metric scales that are not in the default scale list.

In AutoCAD 2006, you can easily create and manage a custom scale list that meets your specific needs. The new SCALELISTEDIT command enables you to access the Edit Scale List dialog box where you can add new scales, edit existing scales, rearrange the scale list, and delete unnecessary scales. All of the scales from the Edit Scale List dialog box automatically display in key locations throughout AutoCAD including:

- Plot dialog box
- Page Setup dialog box

- Viewport toolbar drop-down list
- Properties Palette
- Sheet Set Manager
- Layout wizard

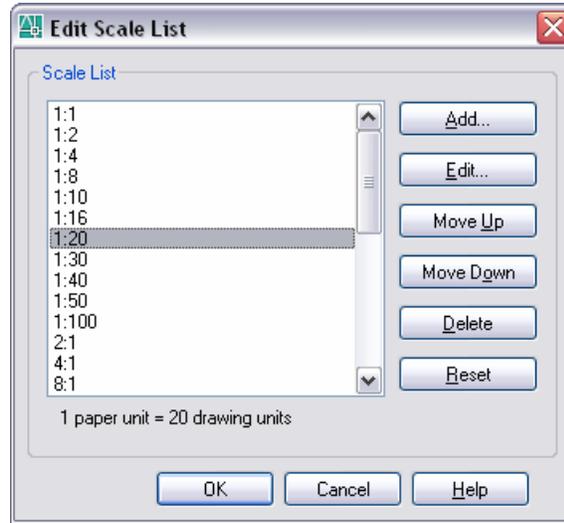


Figure 10. Scale List dialog box.

### Performing mathematical calculations

Technical drawings, such as those you create with AutoCAD, often require you to perform mathematical calculations. To perform these calculations, you might use an external calculator or you might use the powerful, yet cumbersome, AutoCAD Command Line calculator. Either way is distracting and time-consuming as your attention is diverted from your design.

The new QuickCalc functionality in AutoCAD 2006 enables you to focus on your design by providing built-in, graphical 3D calculation capabilities. You can perform calculations in Architectural, Scientific, and Engineering units, regardless of the current Units setting in the drawing. Accessible from the QUICKCALC command as well as through numeric input fields in the Properties palette, QuickCalc is available where you need it, when you need it.

Four expandable panels enable you to perform a full range of operations.

- On the Number Pad, you can enter values and perform basic mathematical operations using an interface that is typical of any standard calculator.
- The Scientific panel offers the more advanced functions that you would find on a scientific or engineering calculator.
- The Units Conversion panel enables you to convert between a variety of metric and imperial units.
- The Variables panel enables you to define global constants and variables that remain persistent across AutoCAD drawings and sessions.

You can enter values or get them directly from objects in the drawing. As you perform calculations in QuickCalc, the values are automatically stored in a history list providing easy access for subsequent calculations. You can paste calculated values to the Command Line or pass them back to the Properties Window.

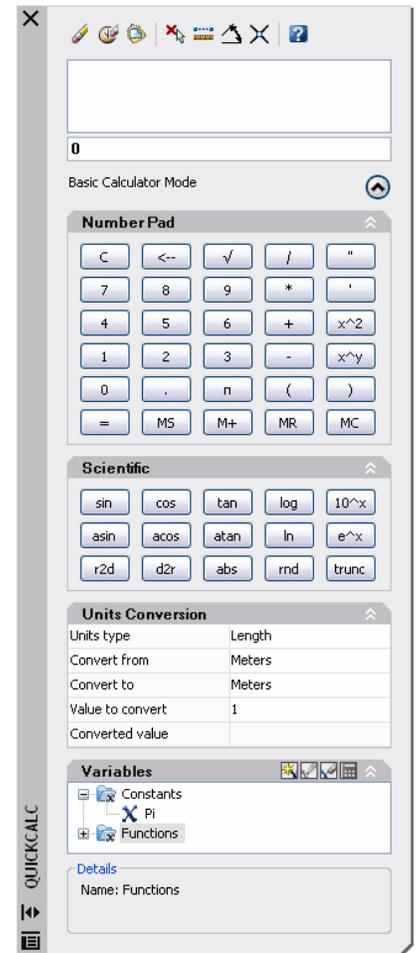


Figure 11. QuickCalc

## Annotating your drawings

Annotation is an essential part of nearly any drawing. You can annotate your drawings using a variety of AutoCAD objects including text, dimensions, block attributes, and tables. Chances are that you can already annotate your drawings exactly as you wish them to appear. However, the process for doing so may be time-consuming and error prone.

Whether you use text, dimensions, block attributes, or tables, AutoCAD 2006 improves the process of annotating your drawings. AutoCAD 2006 offers in-place text editing, automatic bullets and numbering, dimensioning enhancements, and improved support for attribute extraction and tables.

### Editing text in-place

Creating and editing text in previous AutoCAD versions was sometimes a process of trial and error. The size of the text automatically adjusted to make it easily readable in the drawing editor. However, this made it difficult to judge the size and location of the text in relation to the rest of the drawing. You didn't know how the text would really look until you exited the text editor.

In-place text editing in AutoCAD 2006 takes the guesswork out of modifying your text. In-place editing works for both single- and multi-line text. Additional options, specifically for editing multi-line text, are available from a new Options toolbar as well as from right-click menu options. You can choose to show the toolbar, options, and ruler, and, you can even apply an opaque background to the text.

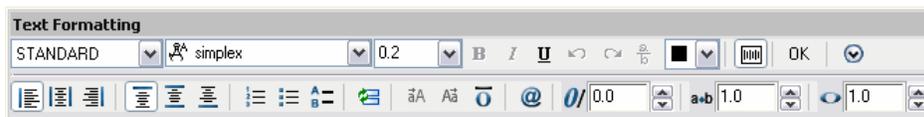


Figure 12. Text Formatting toolbar.

### Creating numbered and bulleted lists

Notes, an important part of almost any drawing, are typically numbered or lettered. In some cases, they may also include sub-notes, which alternate between letters and numbers, or bulleted lists. Creating any of these lists in AutoCAD, prior to AutoCAD 2006, was challenging. If you manually entered sequential number or letters and then added or removed a note in the middle of the list, you had to edit all of the subsequent numbers or letters. Creating bulleted lists required you to find the appropriate bullet symbol and then insert or copy it for each line in which you wanted it to appear.

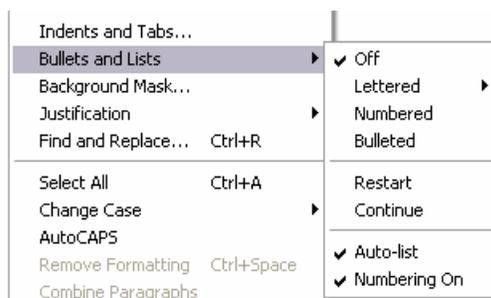


Figure 13. Bullets and Lists menu.

In AutoCAD 2006, creating notes with lists is easy and intuitive. Using new buttons and right-click menu options, you can create lettered, numbered, and bulleted lists. If you enter an alphanumeric character followed by a period, such as "A." or "1.", an Auto-list option automatically converts the text to an appropriate lettered or numbered list. Similarly, if you enter a special character, such as a dash "-" or asterisk "\*", a bulleted list with that character is automatically created and applied to subsequent lines. When the Numbering option is enabled, numbered and lettered items are automatically created in sequential order. If you delete an item from the list, the remaining numbers or letters automatically update to reflect the change.

### Varying dimension Linetypes

Depending on the type of drawings you create, you may want to use a different linetype within the dimension. You can explode the dimension and change the linetype property of the individual lines. However, this can be troublesome because exploded dimensions are no longer associative.

New dimension functionality in AutoCAD 2006 enables you to vary the linetypes of a dimension object without exploding it. You can select different dimension and extension linetypes using the Dimension Style dialog box as well as the Properties Window.

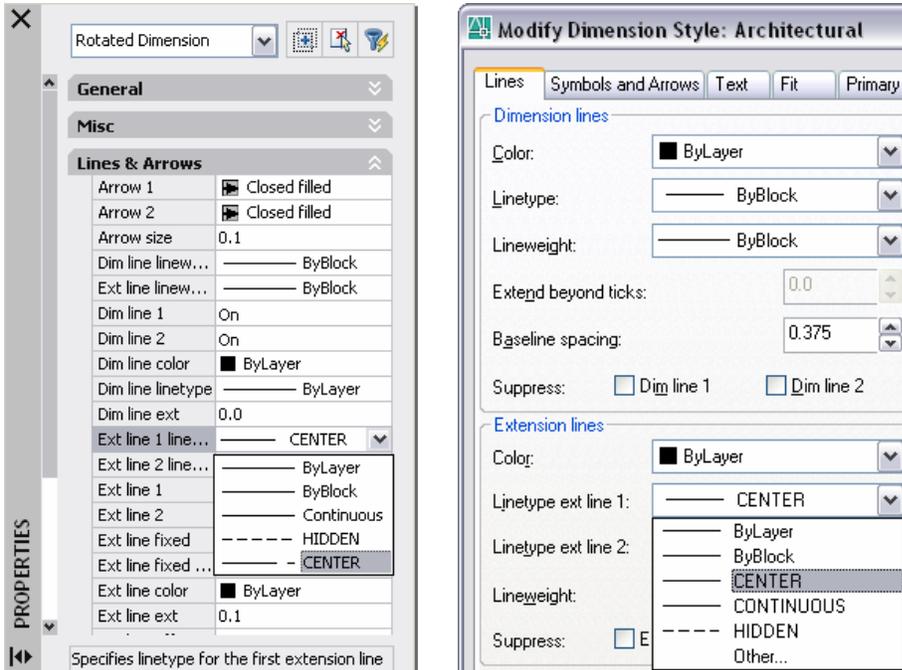
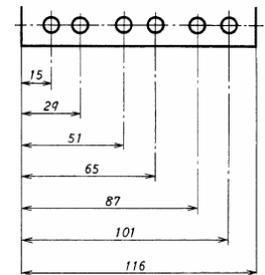
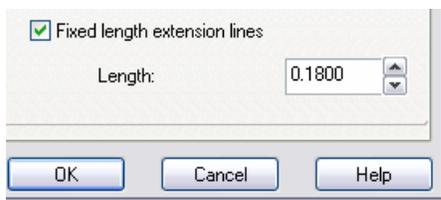


Figure 11. Dimension linetypes.



### Assigning fixed-length extension lines

In some drawings, you may wish to create dimensions from various parts of the drawing using extension lines with a consistent length. You can manually edit the extension line origins after creating the dimensions, but that process can be cumbersome and time-consuming.



New options in the Dimension Style dialog box and Properties Window enable you to specify a fixed length for extension lines. Using fixed length extension lines, you can draw extension lines that do not necessarily touch the geometry with which they are associated.

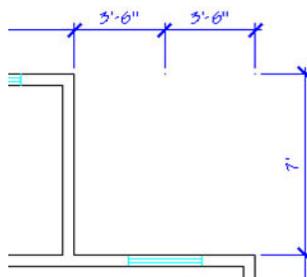
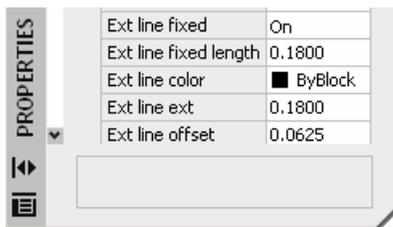


Figure 15. Fixed Length Extension Lines.

### Dimensioning arc lengths

Traditional AutoCAD functionality enables you to create various arc dimensions including the arc radius, diameter, angle, and chord length. In some cases, however, you may want to dimension the length of the arc itself.

Rio offers a new Arc Length dimension. The DIMARC command is accessible from the standard dimension menu and toolbar. You can include an arc length symbol, to help distinguish the arc length from other dimensions, using a new option in the Dimension Style dialog box.

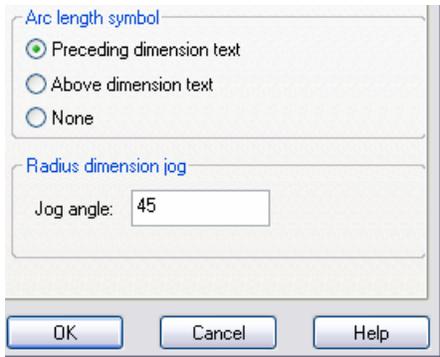


Figure 16. Arc Length dimension.

### Dimensioning curves with large Radii

To properly dimension an arc, radial dimensions should pass through the center of the arc. However, for large radii, the center of the arc is often off the sheet, forcing you to explode the radial dimension and edit it manually.

In AutoCAD 2006, you can specify a jog angle to properly dimension large curves without having to explode the dimension. The jog angle is accessible in the Dimension Styles dialog box.

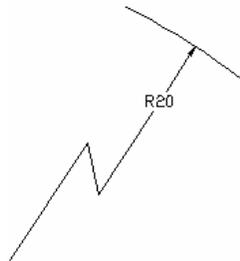
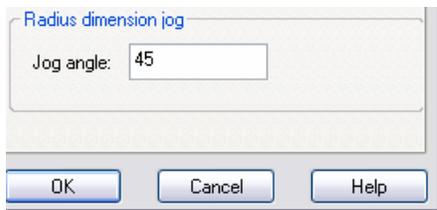


Figure 12. Radius Dimension Jog.

**Flipping dimension arrows**

The Dimension Style dialog box offers minimal control over the placement of dimension line arrows. For example, you can suppress both arrows or you can move them outside the extension lines if there isn't enough room. However, you don't have separate control of the two arrows and you often don't know how you want the arrows to behave until after you place the dimension.

The new Flip Arrow option on the dimension right-click menu enables you to flip the direction of either arrow on a dimension line. Simply select the dimension near the arrow you want to flip and choose Flip Arrow from the right-click menu.

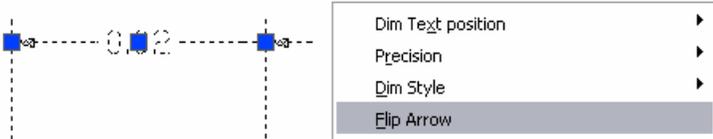


Figure 18. Flip Arrow.

**Specifying initial lengths**

Some drawings, particularly in the manufacturing industry, require the use of a special symbol to indicate the initial length of an object.

AutoCAD 2006 provides a new symbol to indicate initial length. The initial length symbol (Q→) is available from the Symbol list in the right-click menu of the Mtext editor.

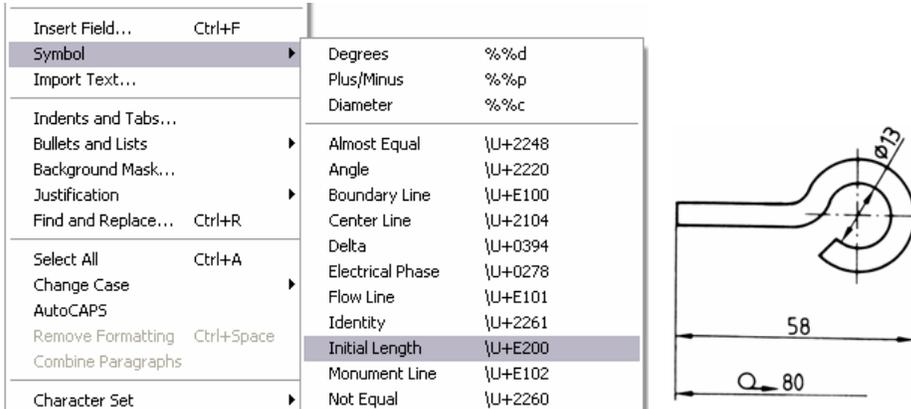


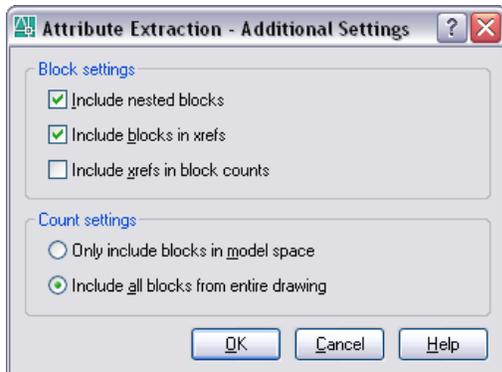
Figure 19. Initial Length symbol.

**Extracting Block Attribute Data into a table**

Depending on your industry, you might use tables for schedules, parts lists, or other types of data. These tables summarize drawing content and list individual components of the design. Currently, you must manually create, populate, and maintain these tables in AutoCAD or extract the data to an external file, open and format it in another application

such as Microsoft Excel, and then import it back into ACAD as an OLE or Table object.

Figure 20. Attribute Extraction - Additional Settings dialog box.



This process is significantly simplified in AutoCAD 2006. Enhancements to the Attribute Extraction wizard provide greater flexibility and control. A new data source option enables you to extract attribute data from an entire sheet set and additional settings provide you with more control over which blocks to analyze.

To prevent confusion from viewing unnecessary blocks and properties in the Attribute Extraction wizard, you can choose to view only blocks with block attributes and only attribute data (as opposed to all of the general block properties). A preview image provides a visual display of the selected block and you can view selected blocks in the current drawing.

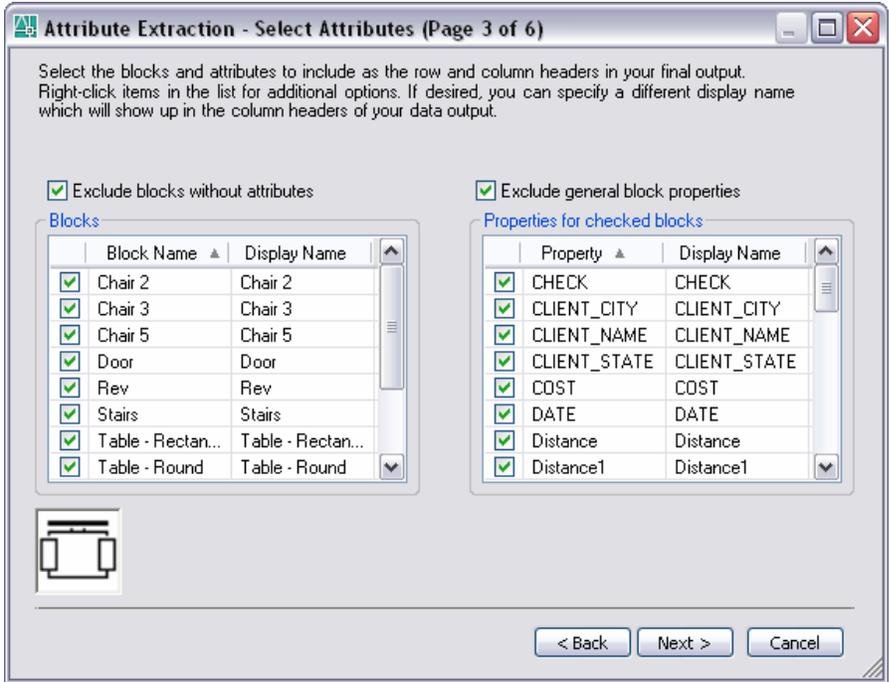


Figure 21. Attribute Extraction - Select Attributes dialog box.

Before finalizing your output, you can preview the data, reorder the table elements and sort the data by clicking on the column header. Once you are satisfied with the output, you can extract it to an external file, an AutoCAD table, or both.

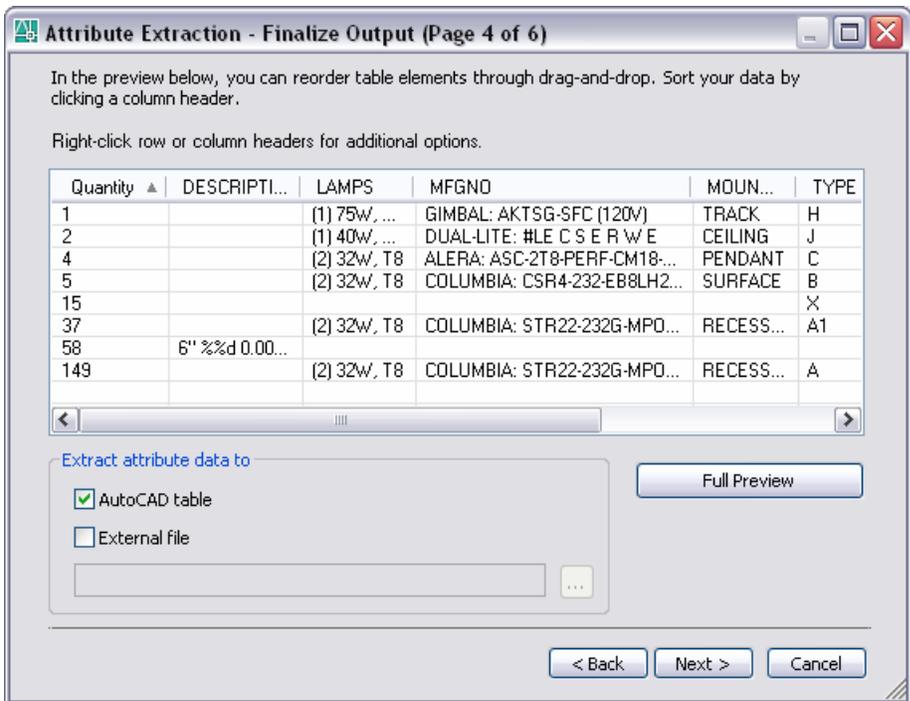


Figure 22. Attribute Extraction - Finalize Output dialog box.

Extracting data to an AutoCAD table enables you to utilize your predefined table styles just as if you had created the table manually. Unlike a manually created table, however, the text in your table is linked to the attribute data. If the attribute data changes, you simply refresh the table for the most current information.

DOOR SCHEDULE							
Quantity	SYM.	WIDTH	HEIGHT	STYLE	REF#	MANUFACTURER	COST
2	3	5'	6'-8"	FRENCH DOORS	FL 301	TRU STYLE	310.00
4	6	5'	6'-8"	BI-FOLD	BF 5068	TRU STYLE	119.00

Figure 23. Table created with extracted data.

**Performing calculations on table data**

Engineering drawings often require you to perform calculations, which must eventually be displayed as some kind of tabular format within the drawing. You can perform the calculations in an external file, such as a spreadsheet, but then you have two locations to maintain the data. Changes to the data in one location may be overlooked in the other.

Enhanced table functionality in AutoCAD 2006 enables you to perform common data calculations directly in AutoCAD minimizing the need for maintaining an external spreadsheet. You can apply simple numeric operations such as Sum, Average, and Count and you can create arithmetic expressions that combine addition, subtraction, division, multiplication, and exponentiation. You can enter the equal "=" sign into any table cell and then dynamically read values from other cells by specifying the proper cell coordinates. Combine cell values, fields, numeric values, and mathematic operands to generate table data.

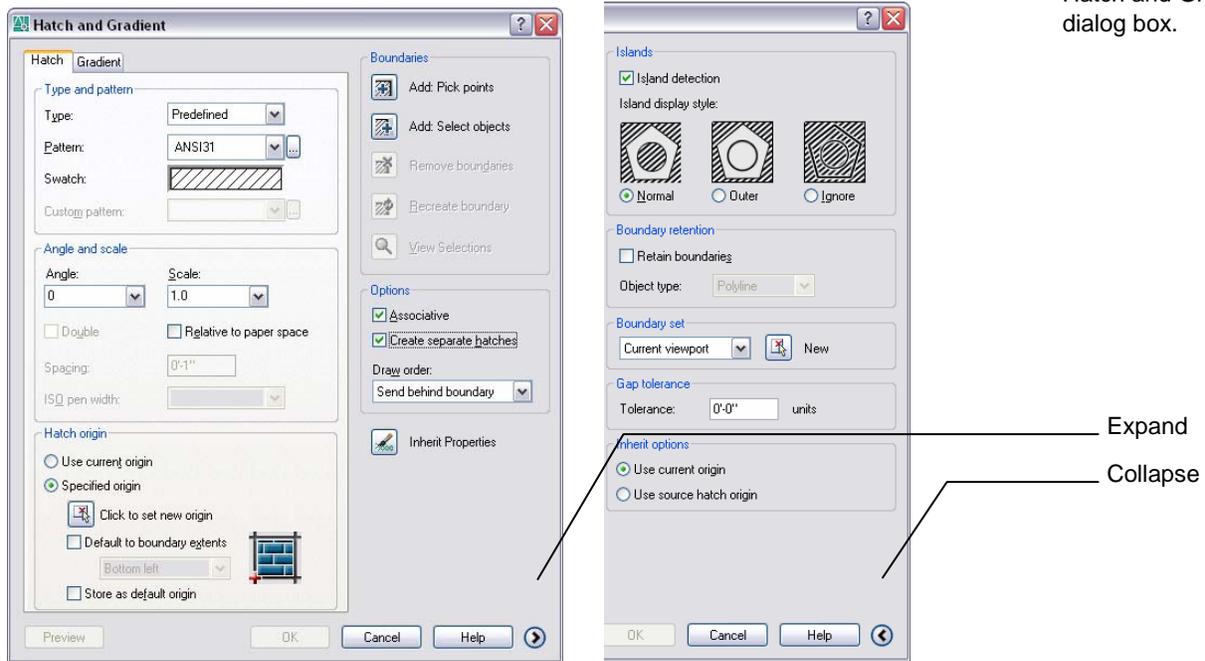
	A	B	C	D	E	F	
1	I.E.C.C. COMMERCIAL BUILDING INTERIOR LIGHTING POWER CALCULATIONS NOTE: BASED ON 2000 IECC SECTION 805.4						
2	TOTAL SQUARE FEET OF TENANT AREA			IECC ALLOWABLE WATTS/SQ.FT.		TOTAL AREA WATTS ALLOWED PER IECC	
3	4808		X	2.10	=	10096.800000	
4							
5	FIXTURE TYPE	FIXTURE QUANTITY		WATTS PER FIXTURE		TOTAL FIXTURE WATTS	
6	'A	38	X	70	=	=B6*D6	
7	AA	11	X	70	=	770.000000	
8	B	10	X	75	=	750.000000	
9	C	171	X	30	=	5130.000000	
10	D	1	X	10	=	10.000000	
11	X	2	X	5	=	10.000000	
12	X1	1	X	5	=	5.000000	
13	TOTAL TENANT AREA WATTS						9325.000000
14							
15	NOTE: FIXTURE "C" IS CALCULATED BY LINEAR FEET OF FIXTURES ONT QUANTITY OF FIXTURES						
16							
17	TOTAL TENANT AREA WATTS			TOTAL SQUARE FEET OF TENANT		TOTAL TENANT AREA WATTS/SQ.FT.	
18	9325.000000		/	4808.000000	=	1.939476	

Figure 24. Table data calculations.

## Hatching your drawings

Hatching is common in many AutoCAD drawings. Significant enhancements in AutoCAD 2006 enable you to create hatches with greater efficiency. The Boundary Hatch and Fill (renamed Hatch and Gradient) and the Hatch Edit dialog boxes have been streamlined. They provide more options for greater flexibility and they include expandable panels for access to advanced options.

Figure 25. Expandable Hatch and Gradient dialog box.

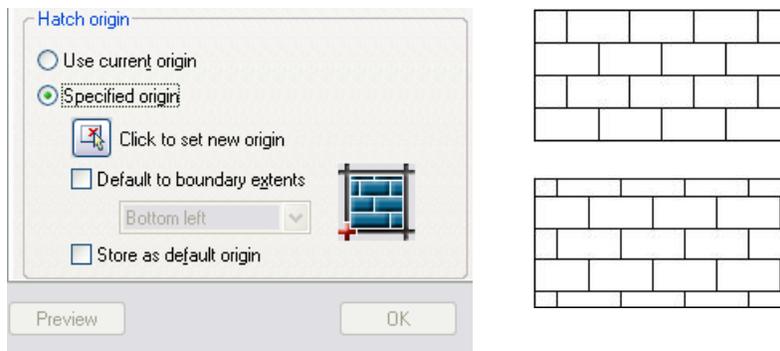


### Controlling the hatch origin

When you create a hatch in AutoCAD, the appearance of the hatch pattern depends on the boundary's location in relation to the UCS origin. This default behavior can create unpredictable and often undesirable results. You can change the appearance of the hatch by indicating a specific point from which the pattern should originate, such as the corner of a boundary. However, prior to AutoCAD 2006, this process was cumbersome and time-consuming.

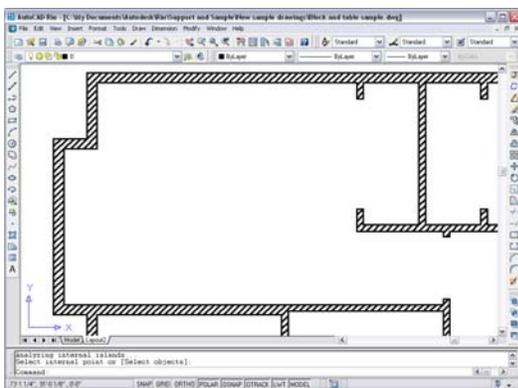
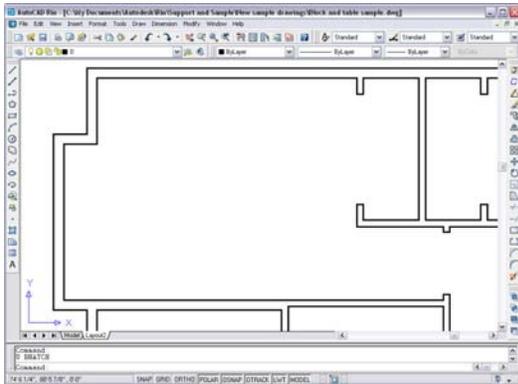
In AutoCAD 2006, you can easily specify the hatch origin while creating or editing a hatch. New Hatch origin controls are available in both the Hatch and Gradient and the Hatch Edit dialog boxes. You can use the current origin, set a new origin by picking a point, or utilize the boundary extents. You can even assign one of these options as default behavior for future hatch operations.

Figure 26. Current and specified hatch origins.



**Specifying hatch boundaries**

Specifying a hatch area in the AutoCAD software program has been somewhat limited in the past. You could specify an area by picking a point within a boundary but the entire



boundary had to be visible on the display. You had to zoom and pan until the entire boundary was visible or divide the boundary into smaller sections. After creating the hatch, you could not easily redefine the boundary based on different objects often forcing you to erase the hatch and start over.

Hatching in AutoCAD 2006 is considerably more flexible, minimizing the time you spend adjusting your hatch boundaries. You can hatch within boundaries that extend beyond the visible display area. For example, you can hatch the walls of an entire floor plan, even if you are zoomed into just one room.

Figure 27. Hatch boundary beyond visible display area

New boundaries options enable you to add, remove, and recreate boundaries as well as view the current boundary selection.



Figure 28. Boundaries options.

**Creating separate hatch objects**

If you want to apply the same hatch properties to several areas of a drawing, you can hatch all of the areas at one time, resulting in a single hatch object. Depending on the situation, this may or may not be the result you are looking for. In Figure , for example, if you create all of the concrete hatches as a single object, you cannot erase or modify the hatch in one detail without affecting the hatch in the other detail. To ensure that the details are independent of each other, you must apply the concrete hatches in two separate operations.

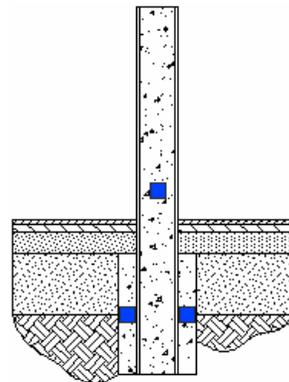


Figure 29. Create separate hatches.



A new option in the Hatch and Gradient dialog box enables you to create separate hatch objects within a single hatch operation. You get the results of performing multiple hatch operations with the efficiency of performing one.

### Finding the hatch area

Sometimes, when you need to apply a hatch to boundary, you also need to determine the area contained with the boundary. For example, you might want to hatch different lots on a site plan to create a visual effect and, at the same time, you need to know the area of those lots. Prior to AutoCAD 2006, you were required to perform two completely independent tasks: Creating the hatch and calculating the area. Moreover, calculating the area was not very easy.

In AutoCAD 2006, determining the area of a hatched space could not get any easier. A new Area property enables you to view the area of a hatch using the Properties window. If you select multiple hatch objects, you can now view their cumulative area.

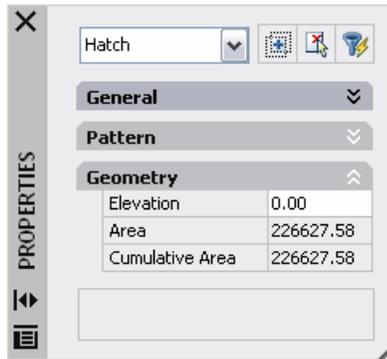


Figure 30. Hatch area.

## Drawing and editing

AutoCAD provides a multitude of commands that enable you to draw and edit geometry of any shape and size. In AutoCAD 2006, many of these commands are enhanced to streamline common drawing and editing tasks.

### Using common editing commands

Inconsistencies or inefficiencies in command behavior can disrupt your thought process and slow you down. Since you probably use common editing commands repeatedly throughout the day, inefficient behavior can potentially add up to a significant loss of productivity.

In AutoCAD 2006, common AutoCAD editing commands have been updated to provide more consistent and efficient command interaction.

- The COPY command includes an Undo option enabling you to undo multiple copied objects within a single COPY operation.
- The COPY, MOVE, and STRETCH commands maintain the most recent displacement value throughout the current editing session.
- The STRETCH command provides more flexible and consistent object selection options. You can use standard object selection methods such as picking on the object, and AutoCAD automatically treats those objects with a MOVE operation. In addition, you can apply multiple crossing selections within a single STRETCH operation to simultaneously stretch objects from varying selection sets.
- The ROTATE and SCALE commands include Copy options, which enable you to create a copy while you rotate or scale an object. The most recent rotation angle or scale value remains persistent throughout the current editing session and using enhanced Reference functionality, you can pick any two points to specify a new angle or scale. You are no longer limited to the base point as one of the reference points.
- The OFFSET command enables you to offset an object multiple times without exiting the command. Additional options within the command enable you to Undo, automatically erase the source object, and specify whether the new object is created on the current layer or on the same layer as the source object.
- The CHAMFER and FILLET commands include an Undo option enabling you to undo chamfer or fillet operations within each command. Additional functionality enables you to quickly create a zero distance chamfer or a zero radius fillet using the Shift key to select the two lines.

- The TRIM and EXTEND commands provide easy access to additional object selection options. A default Select All option enables you to quickly select all visible geometry as cutting or boundary edges and the Fence and Crossing options are now available when selecting objects to trim or extend. When using the Crossing option, the initial pick point of your crossing window determines how the selected objects are trimmed or extended.
- The RECTANGLE command provides new Area and Rotation options. Using the Area option, you can create a rectangle by specifying its area and the length of one of its sides. The Rotation option enables you to rotate the rectangle during the creation process by entering a rotation angle or picking two points.

### Joining similar objects

The drawing editing process can sometimes produce extra objects, which bloat the drawing and cause confusion. The process of removing unnecessary objects and editing others can be time-consuming.

The new JOIN command in AutoCAD 2006 combines individual segments of like objects into a single object enabling you to reduce file size and improve drawing quality. JOIN functionality works on Polylines, Lines, Arcs, Elliptical Arcs, and Splines.

Easily join any number of **collinear** line segments into a single line. The original line segments can overlap, have a gap between them, or share a common endpoint as long as they share the same linear path. Similar functionality applies to arc segments that share the same circular path or elliptical arc segments that share the same elliptical path.



Figure 31. Collinear line segments can overlap, have a gap, or share an endpoint.

The JOIN command enables you to join multiple splines that are on the same plane and have a common endpoint and you can use the JOIN command to close arcs or elliptical arcs, automatically converting them to circles or ellipses.

### Creating and editing Mlines

The Multiline (Mline) object in AutoCAD enables you to create an object with parallel lines. Although multiline objects are useful for drawings such as floor plans, the tools for creating and editing these objects have been somewhat non-standard and cumbersome.

In AutoCAD 2006, enhancements to Mline functionality make Mline objects more flexible and easier to use. The Multiline Style and Multiline Edit Tools dialog boxes provide an updated and more intuitive user interface. Additionally, Multiline objects now support editing with the standard TRIM and EXTEND commands.

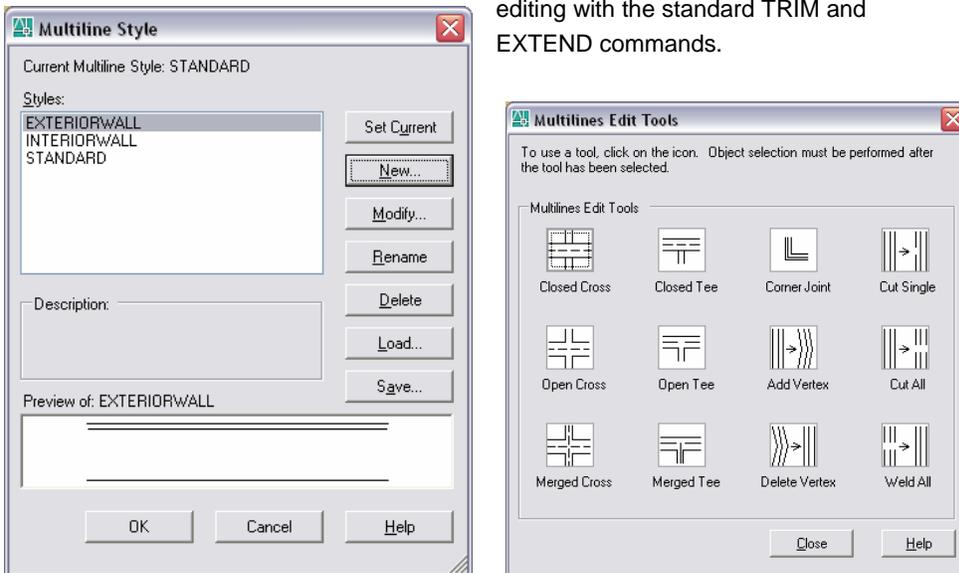


Figure 32. Updated Multiline dialog boxes.

**Accessing Object Snaps on 3D geometry**

A new OSNAPZ variable enables you to filter and replace the Z value of an OSNAP point with the current elevation. If you set OSNAPZ to 1, the Z value of any acquired OSNAP will be replaced with the current elevation or the Z value of the current UCS.

# Manage

## Defining Dynamic Blocks

Defining blocks that fit every shape and size required to create all of your drawings is an almost impossible task resulting in an extensive library of blocks that include multiple variations of the same symbol. All of these symbols and their variations add up to hundreds and even thousands of block definitions. As your block library grows, individual blocks can become difficult to find and access.

Using the Dynamic Block functionality in AutoCAD 2006, you can drastically reduce the size of your block libraries. You can make individual block geometry editable, eliminating the need for you to define a new block for every variation of shape and size.

The new Block Definition Editor enables you to create new block definitions or update your existing blocks. You can access the Block Definition Editor from several locations including the Block Definition dialog box, the right-click menu when you have a block selected, and the BEDIT command.



Figure 33. Accessing the Block Definition Editor.

In the Block Definition Editor, you can use typical AutoCAD drawing and editing functionality to create and modify the geometry for your block definition. In addition, the Block Definition Editor includes a Block Authoring Palette with tools that enable you to apply parameters and actions to your block geometry.

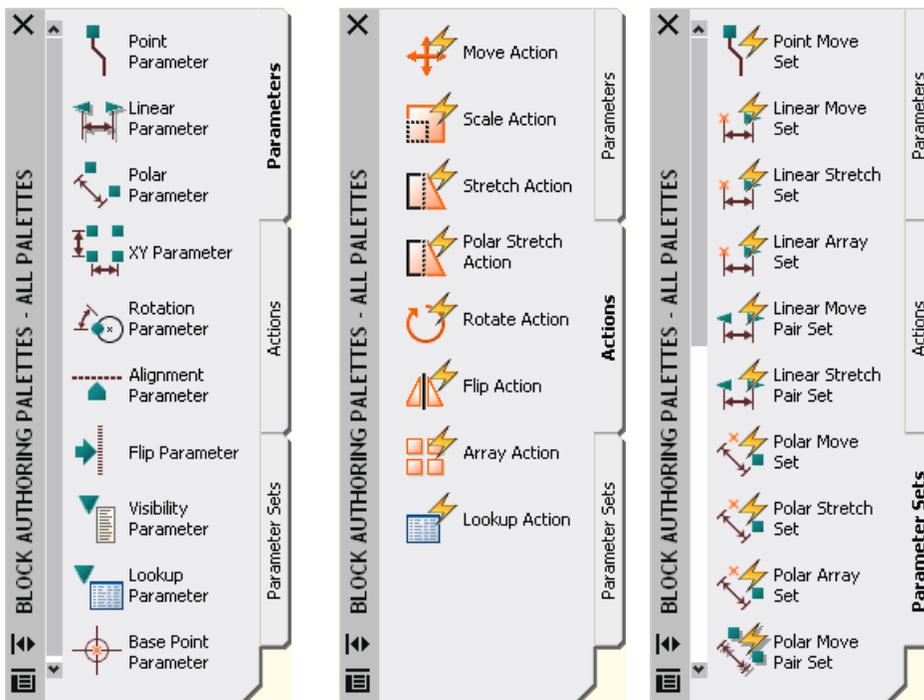


Figure 34. Block Authoring Palettes.

### Applying Parameters

Parameters, available on the Parameters tab of the Block Authoring Tool Palette, are dimensions that drive the block geometry. For example, you could add a linear parameter to a door block to drive the width of a door. Parameters are objects with their own relevant properties, which you can edit using the Properties window. For example, you can modify the properties of the linear parameter so that the door width is constrained to 2-inch increments between the values of 18 and 36 inches.

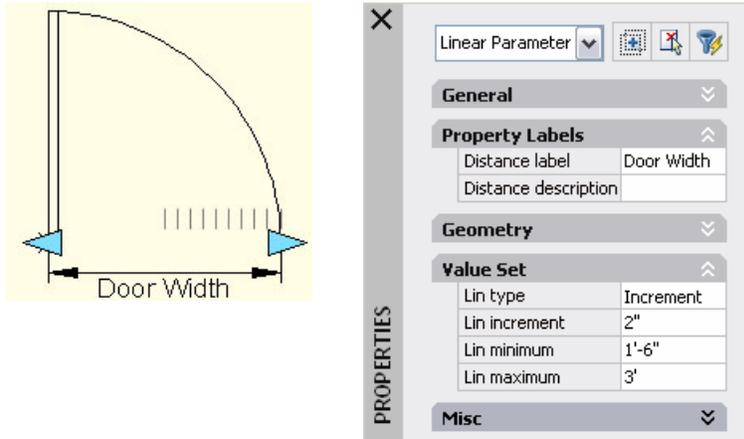


Figure 35. Linear parameter.

### Applying Actions

Actions, available on the Actions tab of the Block Authoring Palette, are what change the geometry as you insert or edit a Dynamic Block instance. For example, if you want to change the width of an inserted door block, you must apply a Stretch action to the Door Width parameter. You can apply multiple actions to a single parameter and you can adjust the properties of the actions using the Properties window. If you stretch the grip for the door width, you want all of the objects that make up the door block to adjust accordingly. You want to scale the arc, which represents the door swing, and you want to stretch the two lines, which represent the door itself. In this case, you would add both the scale action and the stretch action to the same Door Width grip. You would then need to edit the properties of the Stretch action so that it stretched the two lines at a 90 degree offset from the door width parameter.

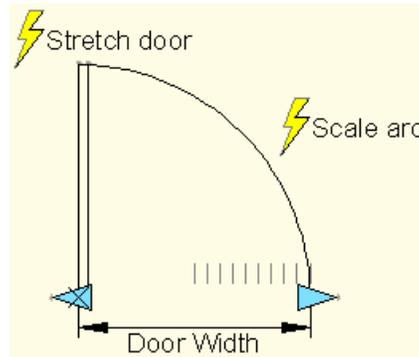
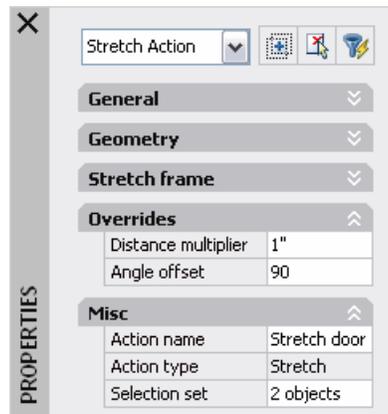
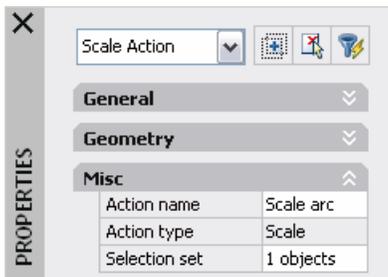


Figure 36. Stretch and Scale actions.



## Customizing the user interface

AutoCAD has always offered considerable flexibility for customizing your user interface. Whether you use menus, toolbars, or the Command Line, you had the ability to tailor your AutoCAD environment to fit your workflow. Although the ability has always been there, it has not necessarily been an easy process. You had to be familiar with many different files and tools to get the desired effect.

New tools in AutoCAD 2006 simplify the process of customizing your user interface by providing a centralized location for creating and editing user interface components. The old menu files (MNU, MNS, and MNC) are replaced with an XML-based CUI (Custom User Interface) file and the old Customize dialog box is replaced with the powerful new Customize User Interface dialog box. The Customize User Interface dialog box includes two tabs: Transfer and Customize.

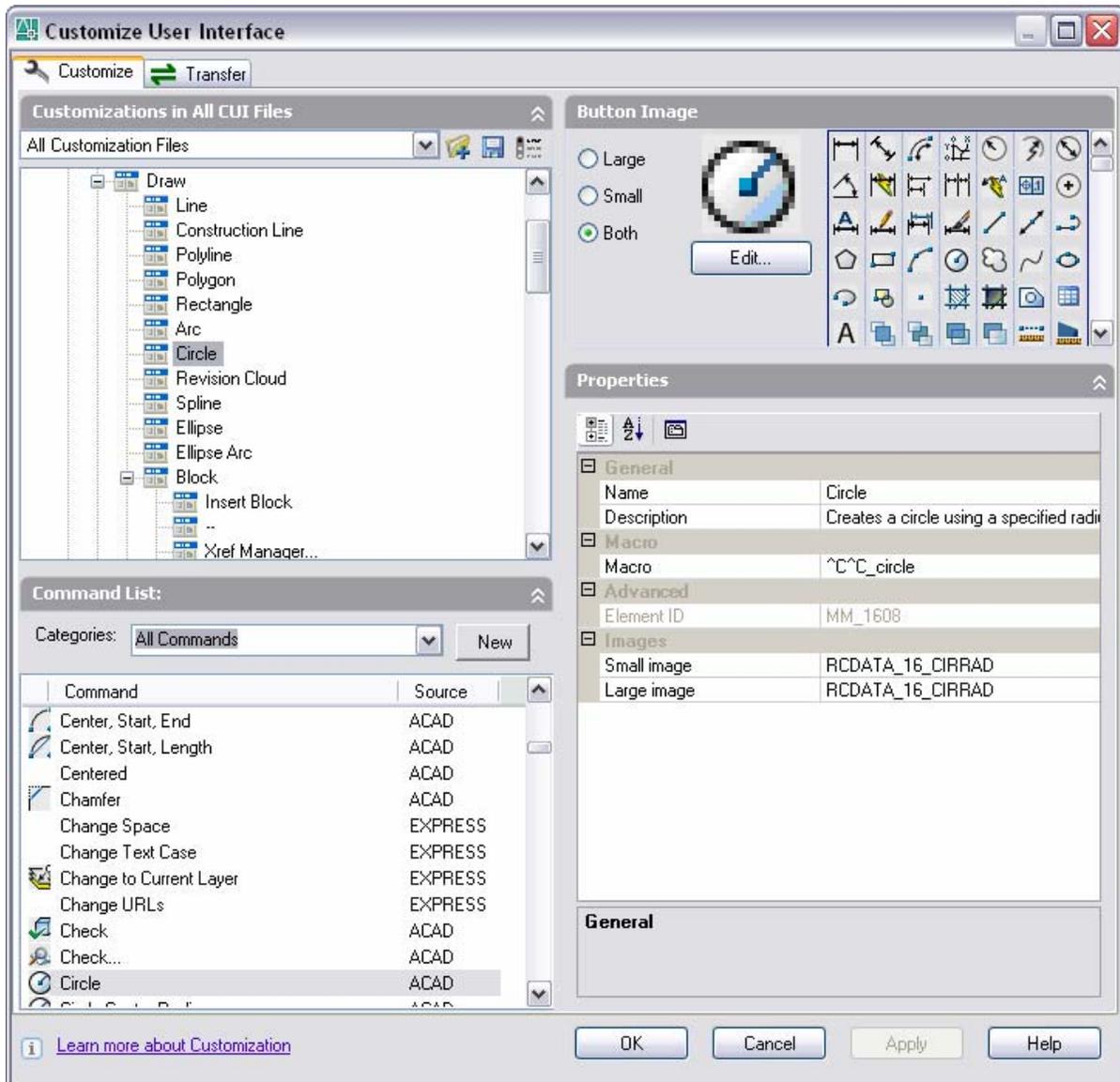


Figure 37. Customize User Interface dialog box.

You can use the Transfer tab to migrate your existing MNU-based tools to the new CUI-based tools. On the left side of the dialog box, you select the file containing the data you want to transfer and on the right side, you select the file into which you want to transfer the data.

The Customize tab provides a tree view of all the customizable user interface components such as toolbars and menus. You can use the tree view to create, rename, or remove UI components. The Command List displays all of the available commands including any custom macros that you wish to add. If you select a command in the Command List, you can view and edit its associated button image and properties. You can use the commands in the Command List to populate the various UI components.

In addition to the familiar UI components such as menus and toolbars, AutoCAD 2006 provides new and enhanced UI functionality to help you streamline your work process.

### Temporarily overriding settings

For several releases, AutoCAD has offered customizable Accelerator keys, which enable you to use keyboard shortcuts to launch commands or toggle between settings. When you change a mode using an accelerator key, that new setting remains persistent until you change it again. In some cases, you may only want to override a setting temporarily for the current operation.

Temporary Override Keys in AutoCAD 2006 enable you to override a particular setting while pressing a specific combination of keys. Unlike with Accelerator keys, the settings changed using temporary overrides automatically return to their previous setting when you release the keys. For example, using temporary override keys, you can begin drawing a line with ORTHO mode off, and then press and hold the Shift key to constrain the current line segment to an orthogonal position. As soon as you release the shift key, ORTHO mode returns to its previous state.

AutoCAD 2006 provides a set of default key combinations for temporary overrides. Using the Customize User Interface dialog box, you can modify these key combinations as well as add your own.

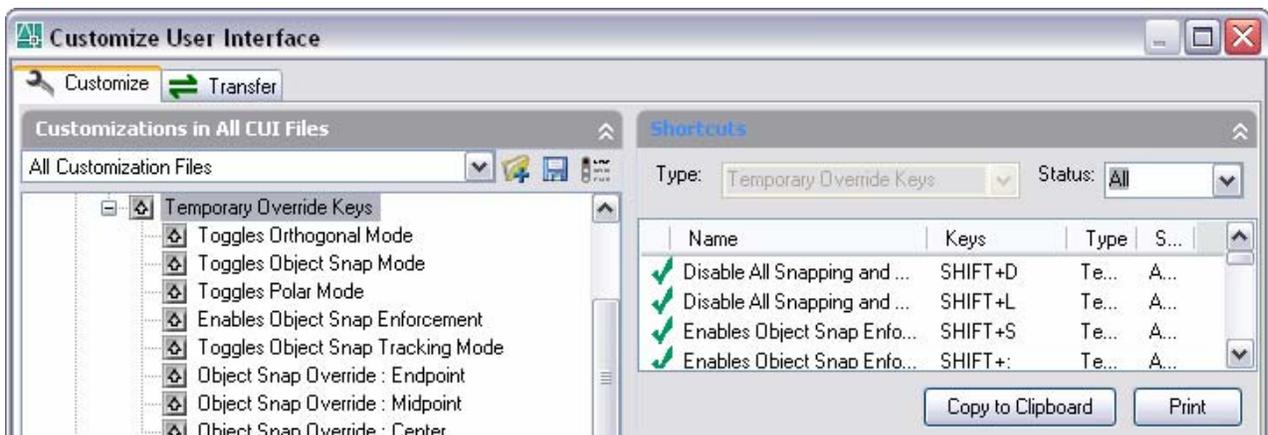
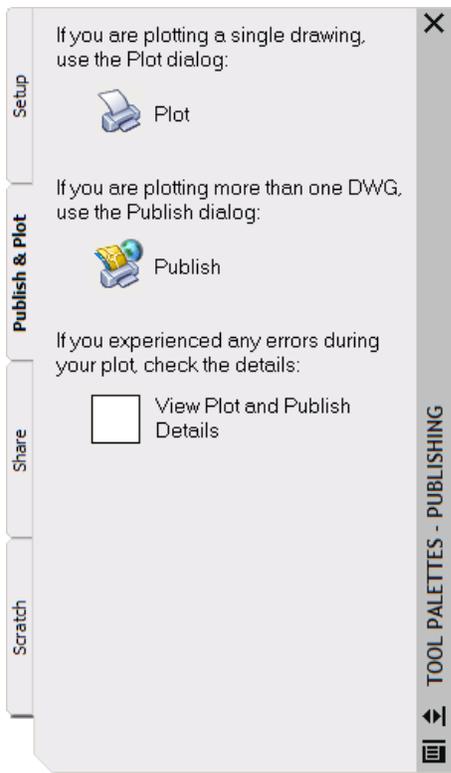


Figure 38. Temporary Override Keys.

### Enhancing Tool Palettes

Tool palettes are easy to create and customize. They enable you to store and access your most frequently used tools without consuming a large amount of screen area. Tool palettes offer many advantages when it comes to creating a task-based user interface and with a few tweaks, they become even more valuable.

In AutoCAD 2006, tool palettes have been improved so that you can better organize and explain your tools. Using right-click menu options, you can enhance your tool palettes with



separator bars and descriptive text to help guide you through task-based processes. By centralizing, organizing, and elaborating on the most appropriate tools for common AutoCAD tasks, you can minimize confusion, save time, and increase efficiency.

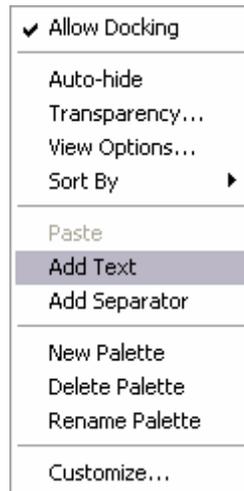


Figure 39. Enhanced tool palettes.

### Utilizing workspaces

AutoCAD provides a vast array of design tools, making it a powerful solution for many design problems. However, this vastness can be a hindrance when you try to accomplish specific tasks. As a new user, you may feel overwhelmed by the huge collection of menus, toolbars, dialogs, and palettes. As an experienced user, you may feel inconvenienced by having to navigate around functionality inappropriate for the context in which you are working.

Workspaces in AutoCAD 2006 solve these problems by enabling you to customize task-based User Interface schemes. You can control the display of toolbars, menus, and tool palettes, as well as application windows such as the command line and Properties palette. Add, remove, and rearrange your user interface components to accommodate your own workflow. When you are ready to move on to the next task, you can quickly change the AutoCAD user interface by selecting an appropriate workspace from the new Workspaces toolbar.

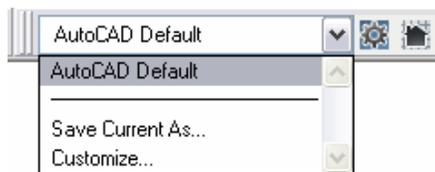


Figure 40. Workspaces toolbar with custom workspaces.

### Locking Toolbars and Windows

You can easily place your toolbars and windows to suit your needs and you can just as easily move them...even if you didn't want to.

In AutoCAD 2006 you can avoid accidentally moving your toolbars and windows by locking them in place. A new icon on the status bar indicates the locking status and you can right-click or double-click on the icon to access the lock menu. You can temporarily override locking by pressing and holding the CTRL key while you move a toolbar or window.



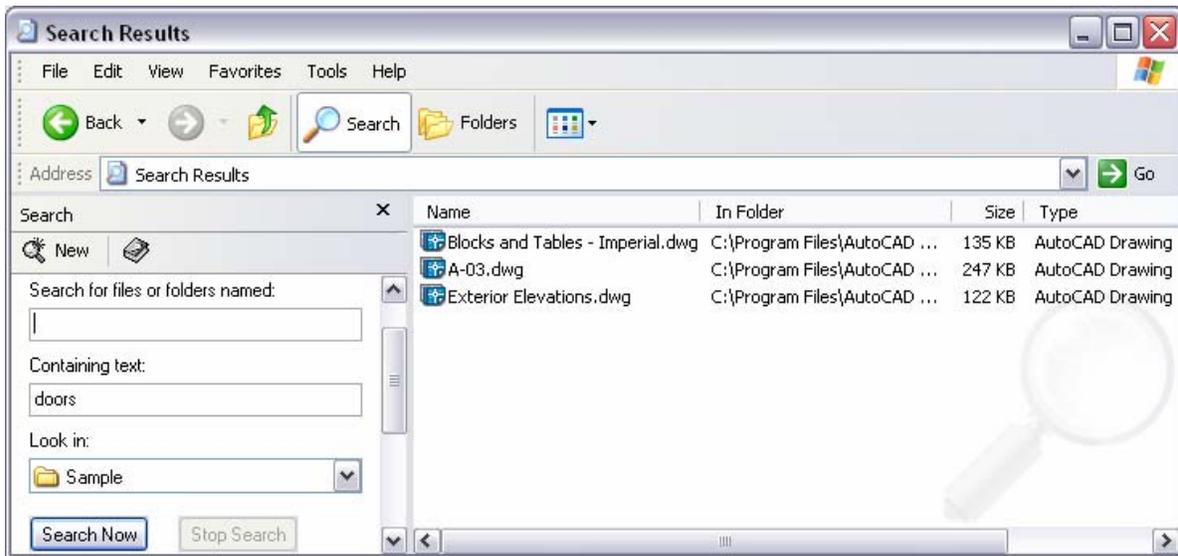
Figure 41. Toolbar and Window locking.

## Finding AutoCAD files from Windows Explorer

As you design your projects in AutoCAD, you can accumulate hundreds and thousands of drawing files. Finding a particular drawing file within your vast network can be challenging. Of course, if you know the file name, you can search on it using Windows® Explorer. In many cases, however, you may not know the file name.

Enhanced functionality in AutoCAD 2006 enables you to use the Windows Explorer search tool to search for specific words or phrases contained within DWG and DXF files. For example, you could search for the word “doors” using Windows Explorer. Any drawing that contains the word “doors,” as text objects, layer names, or elsewhere, would display in the file list.

Figure 42. Search results in Windows Explorer.



## Recovering damaged drawings

In a perfect world there would be no power outages or software crashes. In the real world, you need a fast and easy way to recover drawing files after AutoCAD unexpectedly terminates.

The new Drawing Recovery Manager enables you to retrieve backup files (BAK) or automatically saved versions of your drawings without having to manually search through folders and rename file extensions.

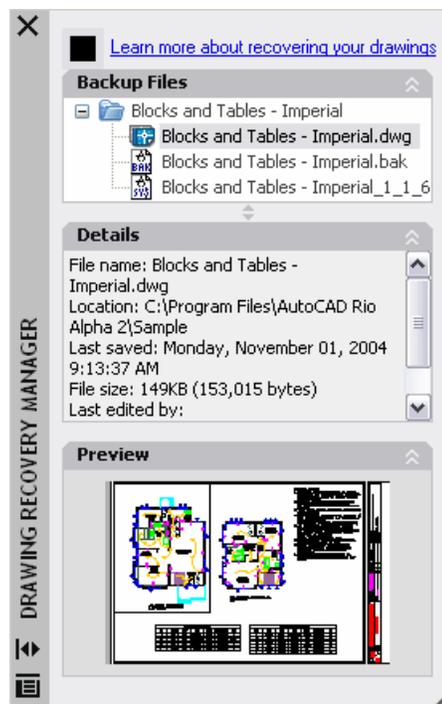


Figure 43. Drawing Recovery Manager.

# Share

## External Reference Bubble Notification

If you are editing a drawing that contains externally referenced files and if one or more of those files changes, you want to reload those Xref files as fast as possible with minimal disruption to your current workflow.

In AutoCAD 2006, the process of reloading modified Xref files has been streamlined. You simply click the notification link and continue with your work without having to access Xref Manager. If you really want to access the Xref Manager, you can still left-click on the Xref icon in the status bar to view the status of Xref files and reload them on a case-by-case basis.

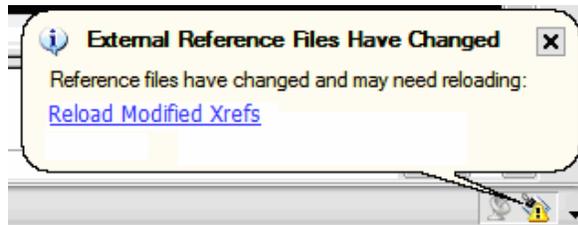


Figure 44. External Reference bubble notification.

## Preview merged objects

For several releases, the Plotter Configuration Editor in AutoCAD has enabled you to control the merge behavior of overlapping objects. However, you were unable to view the merge results unless you actually plotted the drawings.

In AutoCAD 2006, the Plot Preview recognizes when Merge Control set to <Lines Merge> and enables you to view the results prior to plotting. This enhancement to Plot Preview will save you time and money by reducing unnecessary plots.

## Enhanced DWF

Regardless of your industry, the collaborative nature of design requires you to share your drawings outside of your immediate team. Traditional methods of sharing your designs can be costly and time-consuming. The DWF™ (Design Web Format™) file format is the key to the collaborative process of design; however, limitations of DWF data may have prevented it from being a viable alternative to sharing DWG files.

By extending the types of data that can be included in a published DWF file, AutoCAD 2006 provides you with a light-weight alternative to sharing your source DWG files. The updated Publish Options dialog boxes enable

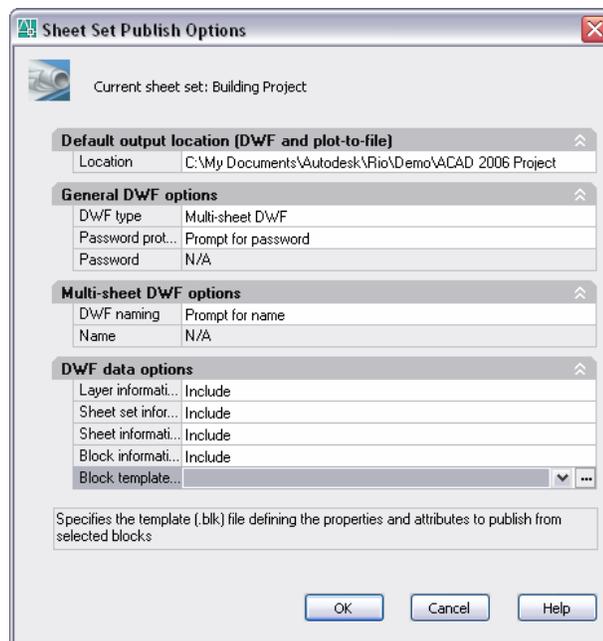


Figure 45. Publish Options.

## **AutoCAD® 2006 Preview Guide**

you to include block properties and attributes as well as sheet and sheet set properties. Moreover, an API (Application Programming Interface) enables developers to publish properties contained in custom objects.

In addition to the powerful 2D DWF enhancements, AutoCAD 2006 offers you a preview of 3D DWF capabilities. You can use the preview command, 3DDWFPUBLISH, to publish your 3D AutoCAD models to DWF.

## Getting up to speed

Upgrading from an older release of AutoCAD can sometimes feel overwhelming. You want the upgrade process to be as smooth as possible and you want to begin taking advantage of powerful new functionality as soon as possible. AutoCAD 2006 offers migration and learning tools that expedite the transition from earlier AutoCAD releases to AutoCAD 2006.

### Migrating from previous releases

AutoCAD 2006 offers many tools to help you get AutoCAD installed and running with minimal disruption to your current workflow. Improvements to the licensing and registration process enable you to install and authorize AutoCAD quickly. You can automatically migrate your custom settings and files from a previously installed version of AutoCAD and additional migration tools continue to aid in the transition.

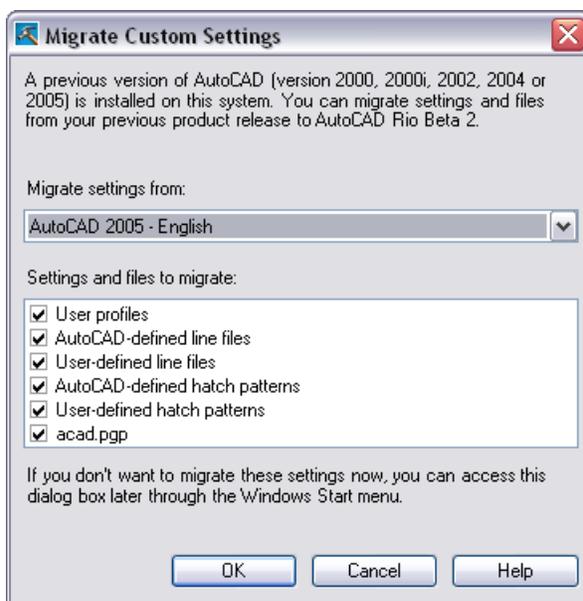


Figure 46. Migrate Custom Settings dialog box.

### Learning new functionality

After you have installed AutoCAD, you will want to learn the new functionality with minimal disruption to your current workflow. The New Features Workshop and QuickStart links in AutoCAD 2006 provide quick access to the information you are most interested in learning.

#### New Features Workshop

The New Features Workshop contains a series of animated demonstrations, tutorials, and feature overviews designed to help you learn the new features. You can view the New Features Workshop the first time you launch AutoCAD 2006 or access it at any time from the Help menu. Not only can you learn about the newest AutoCAD 2006 functionality but you can filter on topics as far back as AutoCAD 2004.

### QuickStart Links

QuickStart links are context-aware links to relevant information. They are provided in strategic locations throughout the software. For example, when creating a new tool palette, you can access a QuickStart link to learn more about customizing tool palettes.

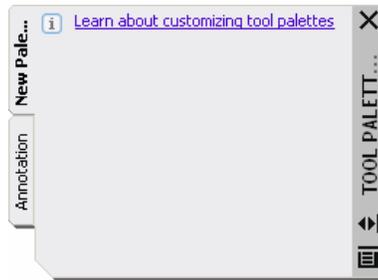


Figure 47. QuickStart link to learn more about tool palettes.

### Subscription Aware

Subscription Aware enables AutoCAD to determine your subscription status. If you have an active Autodesk Subscription contract, you automatically receive access through the Help menu to technical support and e-Learning.

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