

VIII. Editing Tools/Selecting Objects

EDITING METHODS

AutoCAD requires objects to be selected before they can be processed. The *Select objects:* prompt occurs after many commands, including the **select** command itself. In this section you will see various methods for editing objects. Often there are several ways available to do the same editing task. You will learn how to create a selection set of objects, edit using resizing, displacement and modify procedures, use grips to edit objects, edit polylines, use filtering to select objects, and edit properties of objects using the Properties window.

SELECTING OBJECTS

Before you can edit objects, you need to create a selection set of the objects. The selection set can consist of one object or several objects. You can create the selection set before invoking the editing command or you can select the objects after the command has been chosen. We will consider first the use of selecting objects first.

Selecting Objects First

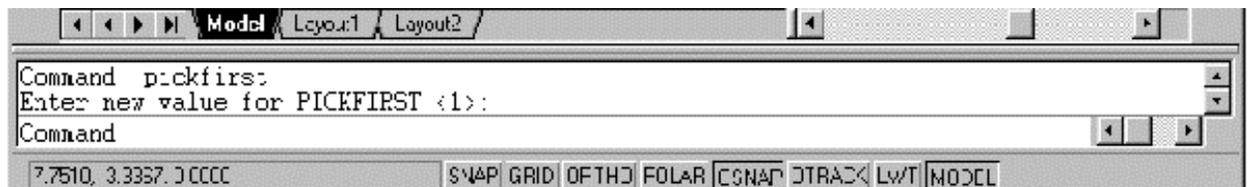
If the HIGHLIGHT system variable is on, AutoCAD highlights the selected objects.



At this time, type <highlight> at the command prompt and hit <enter>.

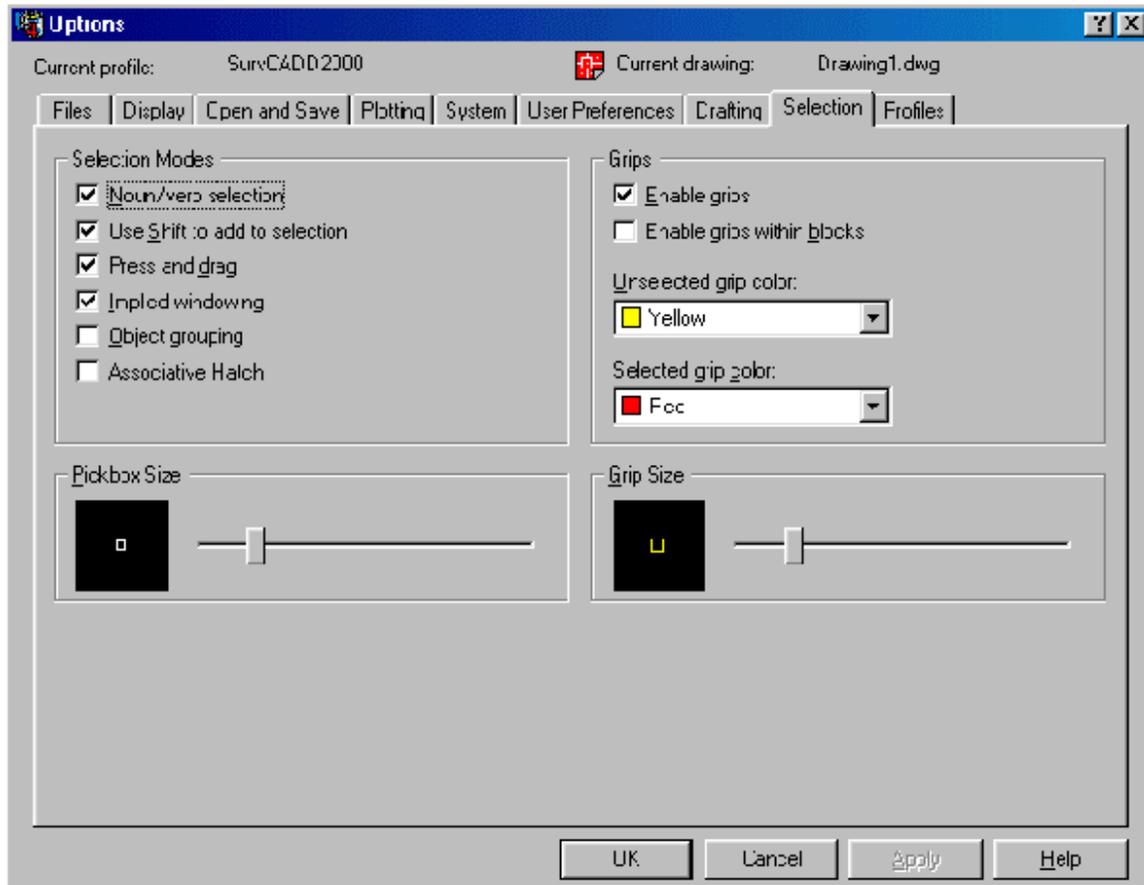
AutoCAD will respond with the current value of HIGHLIGHT. In this case it has the value of <1>, which means that HIGHLIGHT is turned on. A value of <0> would mean that HIGHLIGHT is turned off.

In order to select objects before you invoke an edit command, the PICKFIRST system variable must be turned on. Check this now and set PICKFIRST to <on> if it is presently <off>.



Here we see that PICKFIRST is turned on. Selecting objects first before invoking a command can be a very useful method of editing. In a lot of cases it can save you a considerable amount of time. To do this you use the pointing device to select the object(s) you want to edit. When you do this, the object(s) become marked with small boxes called grips. Grips represent the control points of objects, for example, the endpoint of a line or vertices in a polyline. If you select a block, the insertion point is highlighted as a grip.

In order to use grips you must have them turned on. To turn grips on, go to the Tools menu, select Options, then choose the Selection tab.



In the *Grips* section, check *Enable grips*. At this time leave *Enable grips within blocks* unchecked. Grips within blocks allow you to select grips for the individual objects within a block. You can choose the color of the *Unselected grips* and the *Selected grips*. Note that you want these colors to be different and distinguishable. The size of the box representing the grip can be adjusted using the slider bar. Generally, you want grips to be large enough to see but not so large that they clutter up the screen when you have several objects selected.

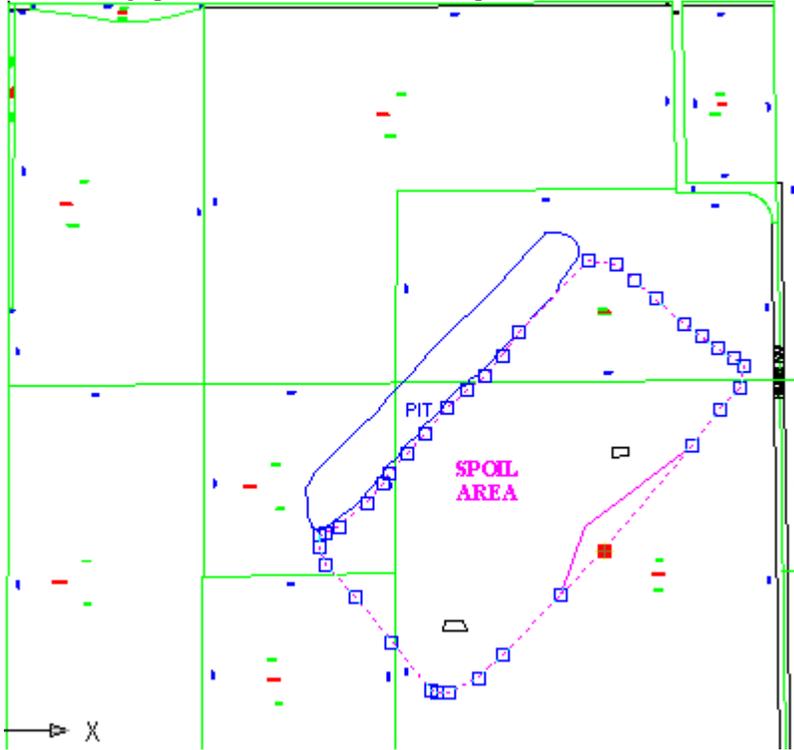
While we are in this dialog box, note the settings for *Selection Modes*. *Noun/verb selection* should be checked since this is the same as setting the PICKFIRST system variable to <1>. Also, check, if not already checked, the *Use Shift to add to selection*, *Press and drag* and *Implied windowing* boxes. These will be useful when creating selection sets.

When grips are visible, they can be in one of two modes. The first is the unselected state which is what you see when the object is selected with the pointing device. The grips are highlighted with the color you set above for Unselected grips and appear as the outline of a small square. The other mode is when the grip has been selected. This is done by moving the cursor over the unselected grip and picking it with the pointing device. As you move the cursor close to the grip note that the cursor will snap to the grip similar to a magnet drawing a small piece of metal toward it when the metal gets within the magnetic field of the magnet. After the cursor has “locked” onto the grip and it has been selected, the color of the grip will change to the color you set above for Selected grips. The selected grip will now appear to be a solid filled square with this color. The grip is sometimes referred to as being “hot” when it has been selected. You can change the state of the grips from Selected (hot) to Unselected (cold) by hitting ESC once. Hitting ESC twice will remove all objects from the select set by turning all grips off. If you want to remove a specific object from the gripped selection set, hold down the SHIFT key as you select the object.

With grips you can use the pointing device to combine commands and object selection and therefore edit more quickly. When grips are turned on, you select the objects before editing. With the grips, you can alter the objects with the pointing device or keywords. By using grips, you can reduce your use of menus.

Editing with Grips

Go to the directory containing the training drawing files and open *bransonAML.dwg*. Using the pointing device, left click on the polyline outlining the spoil area. Move the cursor close to one of the grips and note how it is pulled or snapped on to the grip when you get close to it. With the grip snapped on, left click again and note that the color of the grip changes from Unselected to Selected. This selected grip is known as the base grip and will be used as the base point for the edit.



While the grip is selected, right-click on the pointing device to bring up a menu to display the grip edit options. These options are also available by pressing the ENTER or SPACEBAR key to scroll through the various grip modes (Stretch, Move, Rotate, Scale, or Mirror) displayed on the command line. To exit, press ESC or enter x (Exit) on the command line.

You can activate the Multiple Copy mode by pressing the SHIFT key at the same time you are selecting the first new coordinate location while in one of the grip modes. Upon releasing the SHIFT key, you can continue to make multiple copies of the selected object at new locations you select with the left-click. By holding down SHIFT continuously while you select multiple copy points, the cursor snaps to offset points based on the first two points you selected.

If you want to use multiple grips as base grips in order to preserve the geometry of the object, hold down the SHIFT key as you select the grips. When all the grips have been selected, release the SHIFT key and select one of the hot grips to grab the object to perform the edit.

Exercise

Select each of the options on menu to see how the selected object is modified. Select other objects to see where the grips are located on them and try out some of the options. Can you find one of the lines in the drawings? What do the grips in lines and polylines represent? Experiment with modifying objects using the Multiple Copy mode. Try using multiple grips as base grips to modify an object. When finished, undo any changes that were made.

End of Exercise

Choosing the Command First

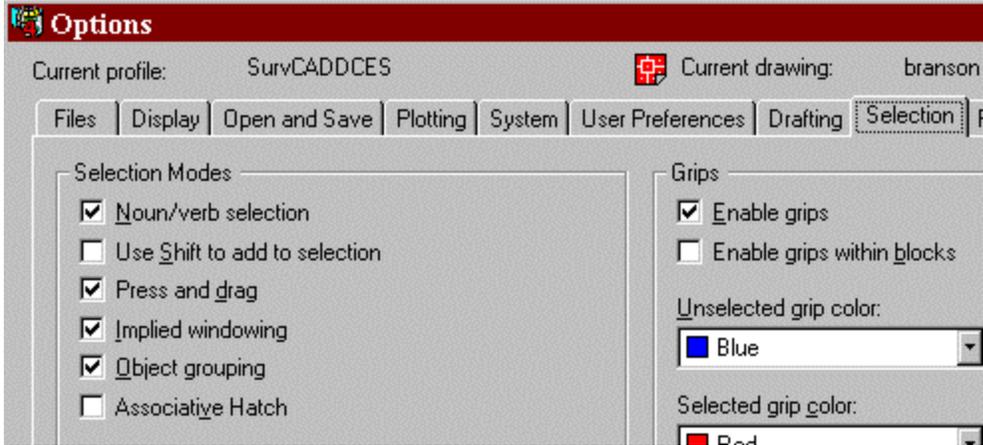
When you choose an editing command, AutoCAD prompts you to *Select objects:* and replaces the crosshairs with a pickbox. You create a selection set by selecting individual objects with the pointing device or by a variety of methods that will be discussed in this section.

You can respond to the *Select objects:* prompt in various ways. You can select the most recently created object, the previous selection set, or all objects in the drawing. You can add objects to and remove objects from a selection set. You can also use more than one selection method to make a selection. For example, to select most of the objects in the graphics area, select all objects and then remove the objects you don't want selected.

Selection Windows

Selection sets can be created by enclosing objects in a rectangular area that you define in the graphics area by specifying two corner points at the *Select objects:* prompt. The order in which you specify the points determines the difference between a *window* selection and a *crossing* selection. Dragging from left to right (*window* selection) selects only objects entirely within the selection area. Dragging from right to left (*crossing* selection) selects objects within and crossing the selection area. Note that the objects must be at least partially visible to be selected.

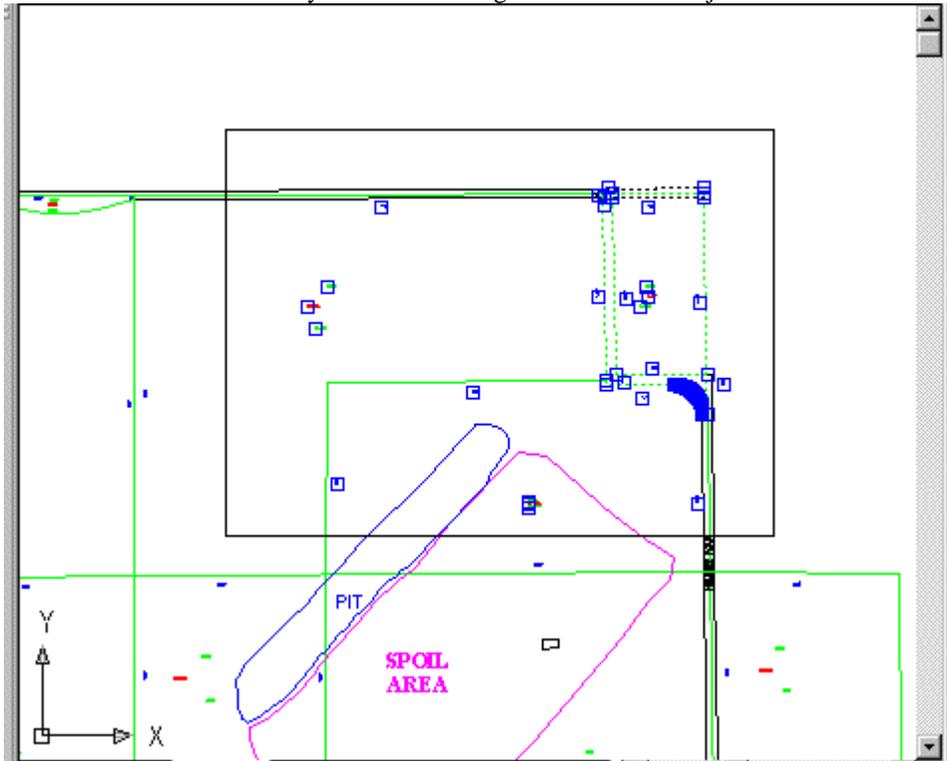
Just a note about creating windows. The default method of creating a window is to click the first and second points that define the window. If *Press and Drag* is on in the Selections tab of the Options dialog box, the window is defined by clicking and dragging. An alternative way to launch the Options dialog box is by right clicking in the drawing window and selecting Options. Choose the Selection tab to view the *Selection Modes* noting the boxes which have been checked.



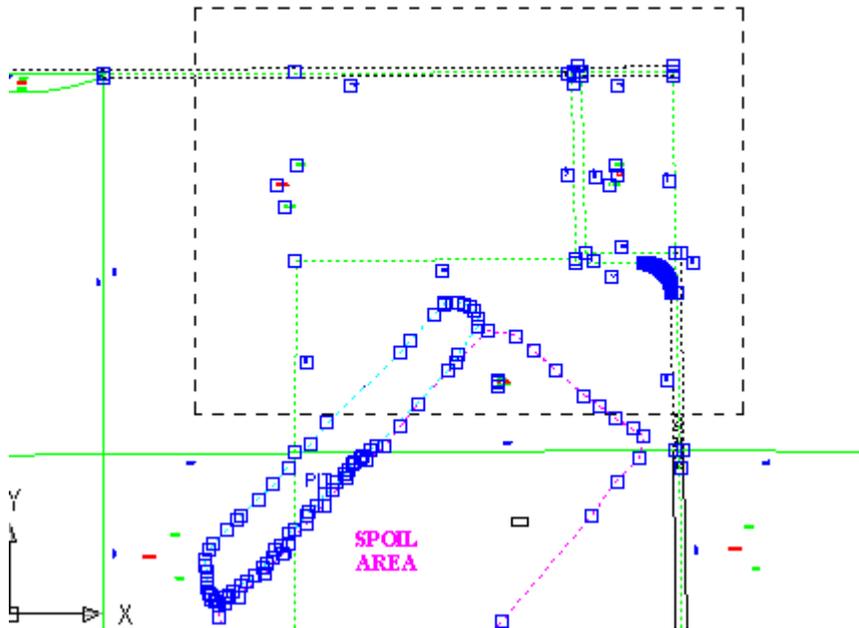
Exercise

Open the *bransonAML.dwg* drawing file and select objects using these two windowing techniques, noting the difference. Also, try selecting objects with *Press and Drag* and *Use Shift to add to selection* unchecked versus checked.

A *window* selection shown by the black rectangle illustrates the objects selected.



A *crossing* selection shown by the dotted black rectangle illustrates the objects selected.



You can also create an irregularly shaped window to select objects. To do this, type **select** at the command prompt, then hit <enter>. At the *Select objects:* prompt type **cp** for a crossing polygon or **wp** for a window polygon, then <enter>. Specify the points that make up the polygon. After the last point is picked, right-click and choose enter. The selected objects will be highlighted. Remember that a window polygon selects only those objects that are completely within the polygon while a crossing polygon selects those objects which it encloses or crosses. Using the loaded drawing, practice selecting objects with both types of polygon windows.

End of Exercise

Selection Fences

The easiest way to select non-adjacent objects in a complex drawing is with a selection fence. A fence is a line that selects all the objects it passes through. At the command prompt type **select** and <enter>. At the *Select objects:* prompt type **f**, <enter>, and pick the fence points. Note that the line can be drawn as a multi-vertex polyline. After the last point is picked, right-click and choose enter. The selected objects will now be highlighted.

Selecting Objects Close Together

In a complex drawing it is often difficult to select objects that are close together or lie directly on top of one another. Using the pick button you can cycle through these objects, one after another, until you have selected the one you want. In the *bransonAML* drawing, enter **select**. At the *Select objects:* prompt, hold down the CTRL key while selecting the outline of the PIT object. Release the CTRL key and left-click the outline of the PIT. Continue clicking (you don't need to click on the line, just anywhere in the graphic window) and notice that the outline changes colors. That is because there are three different colored outlines of the pit, each directly over the other. Once the object you want is highlighted, hit <enter> or

right-click. The desired object has just been selected. Doing this within the **select** command allows you to cycle through the objects and make a selection. However, when this is used at the *Select objects:* prompt within most other commands, you can sort through a maze of objects to select the one you want to be processed by that command.

Adding and Removing Objects from a Selection Set

After you have created a selection set, you can add or remove objects from that set. On the command line enter **select** and type **box** to create a window selection box. Constructing the box from right to left creates a crossing selection while going from left to right creates a window selection. If you type **w** instead of **box**, you would create a window selection box that would only select those objects that were completely within the box. Similarly, by typing **c** instead of **box**, you would create a crossing selection box that would select those objects that were included within and touching the box. A note about creating selection boxes or windows: Turn on implies windowing on the Selection tab in the Options dialog box. This will save you from typing **w** or **c** or **box** every time you want to select using a window.

Add objects to the selection set by typing **a**, then <enter> at the *Select objects:* prompt. Pick those objects you want to add to the selection set. You can remove objects from the selection set by typing **r**, then <enter> at the *Select objects:* prompt. Pick those objects you want to delete from the set. Clear the selection set by hitting ESC twice.

Other Selection Methods at the *Select objects:* Prompt

At the command prompt type **Select**, then at the *Select objects:* prompt type **?**, then hit <enter> to get a list of selection options available. The default modes for *Select objects:* is **auto** and **add**.



Some of these options have already been discussed previously. If you type **l** or **last** and hit <enter> at the *Select objects:* prompt, the last object drawn will be selected. To check this out, draw an object in the graphics window, then type **select**, <enter>, **l**, <enter>. The object you just drew should have been selected.

Type **p** or **previous**, then <enter> at the *Select objects:* prompt will highlight the previous selection set that was created. Check it out.

If you want to select all of the objects in the drawing, not just the graphic window, type **all**, <enter> at the *Select objects:* prompt. Note: only those objects on thawed layers will be selected.

The multiple option allows you to select objects without highlighting them as you select them to keep from cluttering up a complex drawing. When you have finished selecting objects, hit <enter> and the selected objects will be highlighted without grips. Also, implied windowing is not active in multiple mode. Single objects can be selected by entering the **si** or single mode.

Undo cancels the selection of the most recently added object to the selection set. Type **u** or **undo** and hit <enter> at the *Select objects:* prompt.

The auto selection mode allows you to point to an object to select it. Pointing to a blank area inside or outside an object forms the first corner of a box defined by the **box** method.

Finally, the group mode selects all objects within a specified group. Type **g** or **group**, hit <enter> at the *Select objects:* prompt, then type a name list at the *Enter group name:* prompt.

Groups

A group is a named selection set of objects. Generally, selection sets are considered unnamed and are not saved within the drawing. In order to save a selection set it must be named, thereby creating a group. An object can be a member of more than one group. You can list all the groups to which a selected object belongs by using the *Find Name* option in the *Object Grouping* dialog box. To open the Object Grouping dialog box, type **group**, <enter> at the command line. Enter a name and a description for the group. Select the New button, then pick the objects to be included in the group. Try creating some groups in the *bransonAML* drawing. For additional information on groups, refer to Chapter 9 in the AutoCAD 2000 User's Guide.