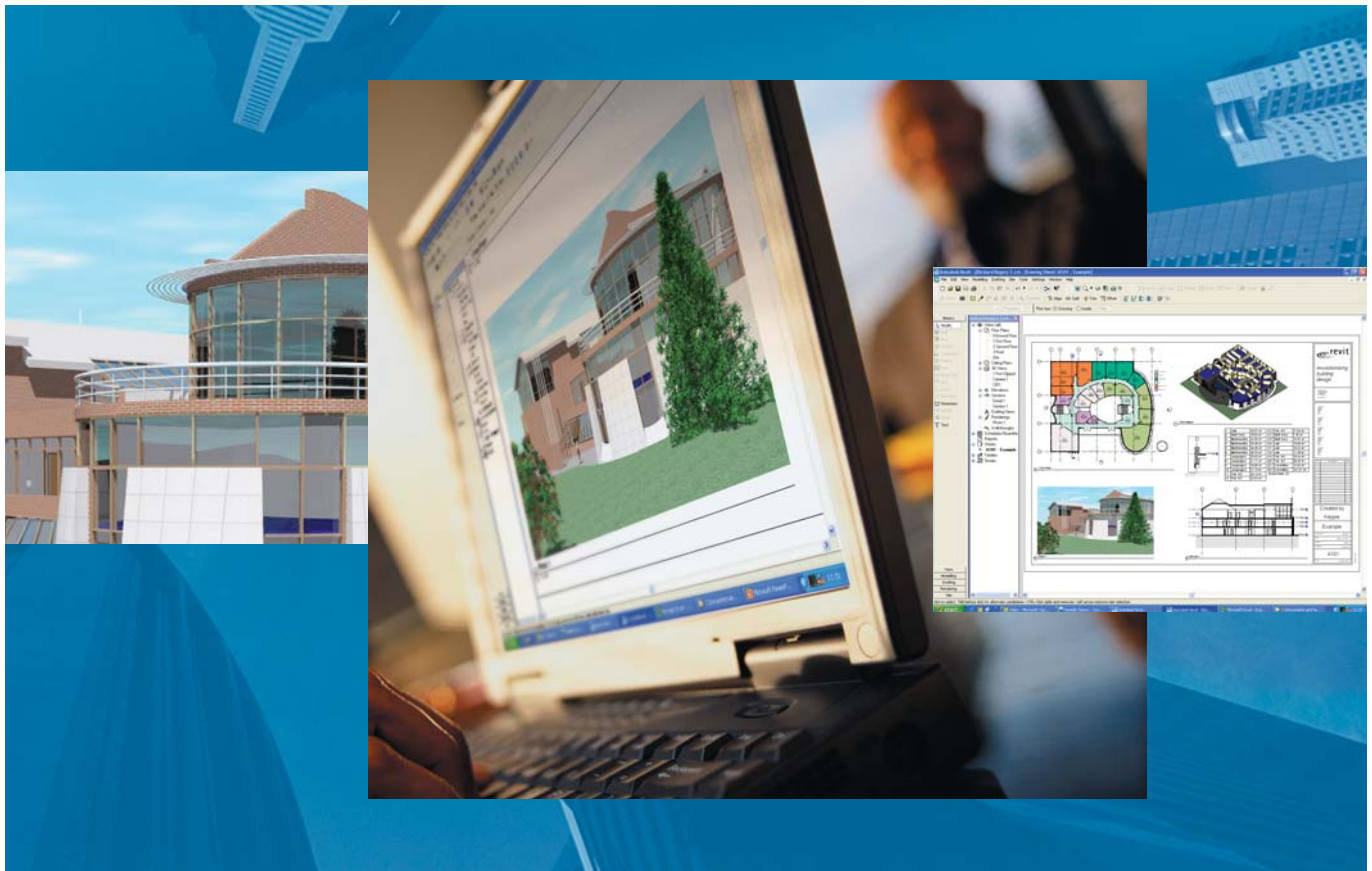


# Tips & Tricks for CAD Software

## Explore New Ways to Maximise Productivity

By Terry Dean, Tim Bates, Kevin Lilley and Russ Monrose of Excitech Computers Ltd.



### Introduction

It is a well known fact that most users of software applications use only a limited set of the software features and despite developers adding more functions in new software releases many of these are still not used or even known about. Yet these simple functions can not only make designing easier but also have a dramatic improvement on design productivity - hence the popularity of these in Excitech's training courses. Feedback from readers of our last DPJ issue suggested we should publish some of the most useful and so we have. In the following pages you will find our top "Tips and Tricks" for Autodesk AutoCAD, Architectural Desktop, Revit and Bentley MicroStation.

### Autodesk AutoCAD 2004 Tips and Tricks

#### Tip 1: MTEXT Zooming

On entering the MTEXT dialogue box you find the text is displayed either too small or too large. Holding down the CTRL Key and rolling the wheel on your mouse can easily resolve this problem. Depending on which direction the wheel is rolled will determine whether the text appears larger or smaller.

#### Tip 2: Personalised MTEXT Cursor

After loading the MTEXT command you will notice the letters "abc" appear alongside the cursor. The size and style of these letters indicate the current text height and style. Changing the system variable

MTJIGSTRING will enable you to personalise your cursor with any letters of your choice. (e.g. Excitech.)

#### Tip 3: Automatic Panning

When about to use a selection window and you suddenly realise you cannot see enough of the drawing, just hold the pick button down for the first corner of the window and drag the cursor to the edge of the screen. AutoCAD will automatically start to pan. When enough of the drawing is visible, release the pick button and select the desired "opposite corner"

#### Tip 4: Don't ask me anymore!

The next time you convert LINES to POLYLINES using the PEDIT command and you do not want to be asked whether or

not you want to do it, set the system variable PEDITACCEPT to 1 and this prompt will no longer appear.

**Tip 5: Why didn't they add MIRROR to the Right Click Menu?**

This is a question I am constantly asked and it is fairly easy to remedy. I am about to show you how to edit a menu file so to play safe always make a copy of the file first, then if things go wrong you have a backup. The file we are going to edit is the ACAD.MNU file. Once you have found this file open it within Notepad. Perform a "Find" for **\*\*CMEDIT**. This part of the file determines the commands shown on the right click menu. Using your cursor, highlight the entire text string assigned to rotate:

**ID\_Rotate**

```
[R&otate]$M=$(if,$(eq,$(substr,$(getvar,cmdnames),1,4),GRIP),_rotate,^C^C_rotate)
```

Note: Text may appear in a single line

Copy this selection to the windows clipboard. Place your cursor and click to the right of the bracket after the word rotate and then press enter. This will create a new line in readiness for the new addition. Paste from the clipboard to fill this new line and replace any reference to Rotate with Mirror.

**ID\_Mirror**

```
[M&i&rror]$M=$(if,$(eq,$(substr,$(getvar,cmdnames),1,4),GRIP),_mirror,^C^C_mirror)
```

Note: Text may appear in a single line

Save the file.

**Note:** If you have already customised menus, **DO NOT** carry out the next step unless all customisation has been added to the ACAD.MNU file. If in doubt, do not proceed.

Rename the ACAD.MNS and ACAD.MNC files to ACADOLD.MNS and ACADOLD.MNC. Start AutoCAD. Draw any object. Select this object, Right - Click and hey presto! You now have Mirror added to the Right - Click Menu. If you experience problems replace ACAD.MNU with the copy you made earlier and delete the ACAD.MNS and ACAD.MNC files.

Remove the word OLD from the previously renamed files. This will reinstate the original files.

**Tip 6: Trim Extends and Extend Trims**

The next time you want to perform a Trim followed by an Extend or vice versa, don't bother doing this with two separate commands. Instead, after loading the Trim or Extend command and performing the initial operation, hold down the shift and the command will reverse its functionality!

**Tip 7: What LT or Hatch Pattern Scale?**

Trying to establish an ideal Linetype or Hatch Pattern Scale can sometimes be a frustrating trial and error experience. The following formulas may help to reduce the frustration and time it takes to establish a preferred scale.

$$LTSCALE = \frac{\text{longest length of line using linetype}}{420}$$

$$HPSCALE = \frac{\text{longest length of area to be hatched}}{150}$$

**Note:** AR patterns are considered "Full Size" patterns. Therefore, if the area to be hatched is drawn at an appropriate size, a scale of 1 should suffice. However if an AR pattern is to be used in an area that is intentionally drawn not at an appropriate size the following formula should assist in establishing the correct scale:

$$HPSCALE = \frac{\text{longest length of area to be hatched}}{2000}$$

**Tip 8: Toggling Groups ON and OFF**

Toggling groups on and off quickly and easily used to be a piece of cake by simply typing CTRL-A but ever since AutoCAD became more Windows compliant, CTRL-A has been reconfigured to select all objects on screen. So the next time you want to toggle groups on or off, try CTRL-H instead.

**Tip 9: Double Click Editing is Great, but not when I'm Dragging and Dropping!**

When Dragging and Dropping objects quickly, it's probable the Object Properties Window or other dialogue boxes related to the selected object will frustratingly

keep appearing and slow you down. To prevent this happening, switch the system variable DBLCLKEDIT to OFF.

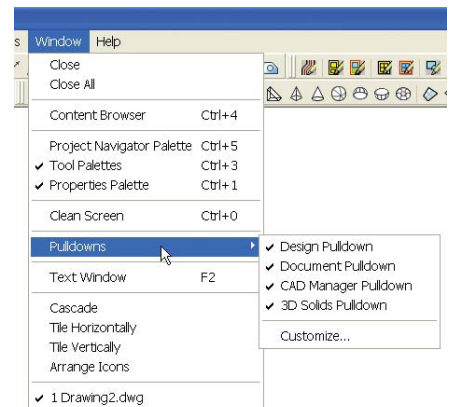
**Tip 10 OOPS! A Forgotten or Unknown Command?**

OOPS may be an unfamiliar command, especially for new users. This was a command that was originally introduced to bring back erased entities recently used to create \*Blocks. (\*The Make Block Dialogue box has a "Retain" option that performs this task now.) OOPS, unlike UNDO, will only bring back the last erased objects and will not undo any additional work carried out since the erasure. To use this command, simply type it in via the keyboard.

**Autodesk Architectural Desktop 2004 Tips and Tricks**

**Tip 1: Additional Pull-down Menus**

Additional pull-down menus are available for those of you migrating from the previous release of Architectural Desktop and still finding your way around the new tool palettes. These pull-down menus can be enabled from the "Window > Pulldowns" menu.



Enabling additional pull-down menus.

**Tip 2: Additional Wall Cleanup Tools**

There are two additional Wall Cleanup tools that are available in Autodesk Architectural Desktop 2004 that will certainly make you more productive. The first tool is "Apply L Cleanup". This tool will automatically trim or extend two walls so that the nearest corner meets exactly in the shape of an L. The second tool is "Apply T

Cleanup". This tool will automatically trim or extend the selection set to another wall. Both tools can be found from the "Cleanups" item on the right click menu when selecting a wall. Remember also that the normal AutoCAD trim, extend, break, fillet and chamfer commands all now work on walls!

**Tip 3: Additional Insertion Options for Openings**

Did you know that with ADT 2004, you can insert opening derived objects such as doors and windows with even greater accuracy? Not only are there in-place dimensions that appear upon insertion, but you also get even more insertion options. For example, if you right-click while adding one of these objects, you now have the ability to measure the insertion from the outside of frame, inside of frame, and centre of the frame. You can also pick Reference points, which will give you a temporary line, so that you can make the insertion point be relative to any point you choose. This is good for aligning openings with other objects in your design.

**Tip 4: Wall Clean Up Through X-refs**

Did you know that walls in Autodesk Architectural Desktop can now clean up across external references (x-refs)? First, make sure that the walls that you would like to have clean-up are on the same Cleanup Group. Now edit the Cleanup Group style for both drawings. You will find Cleanup Groups in Style Manager listed as "Wall Cleanup Group Definitions." Go to the Design Rules Tab and select the checkbox that says "Allow Wall Cleanup between host and xref drawing".

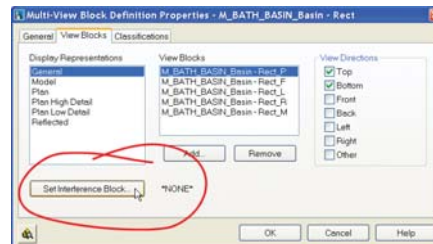
**Tip 5: Accessing Schedule Data**

Property Set Data used for automatic scheduling is now consolidated with an object's design properties on the 'Extended' tab of the Properties Palette. In the Extended Data tab, you can access, add and/or edit Schedule Data of selected objects quickly and easily.

**Tip 6: Multi-view Blocks**

There is an addition to multi-view blocks (MVBlocks) that allows you to specify a "cut body" when the MVBlock references

are applied as an interference to other objects such as walls, slabs and roof slabs. This tool is ideal for the creation of sinks or skylights.



Setting an Interference object in a Multi-View Block definition.

**Tip 7: Creating Custom Column Grids**

Autodesk Architectural Desktop now supports the creation of custom column grids. In addition to rectangular and radial column grids, users can create column grids of any shape simply by converting linework such as lines, arcs and polylines. Simply right-click on the Structural Column Grid tool on the Design Tool Palette and choose "Apply Tool Properties to > Linework".

**Tip 8: Creating Terrain with the Drape Command**

Do you want to create terrain models for your Architectural Desktop designs? It's simple. Use the new Drape tool from the Massing palette to convert a series of polylines (contour lines) that have different elevations. The result will be a freeform mass element that can be used to represent terrain models for presentation purposes.

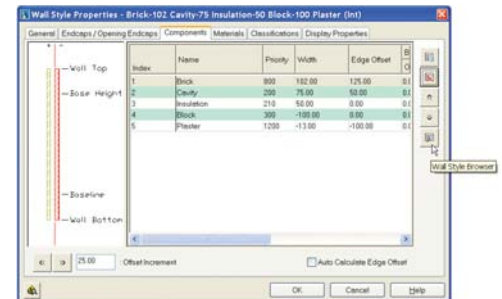
**Tip 9: Creating hand-drawn Napkin Sketches**

When creating a Napkin Sketch of any 3D view, use the CREATEHLR command ("Document > Hidden Line Projection") on your design first to create a clean, hidden line projection of your model. Then use the "Document > Napkin Sketch" feature on the resulting block to create persuasive, hand-drawn presentation graphics.

**Tip 10: Wall Style Browser**

Creating a new wall style? Use the Wall Style Browser to search existing wall styles and find components that are already constructed. Simply drag and drop the

desired component to the Wall Properties dialog as you design your new wall style.



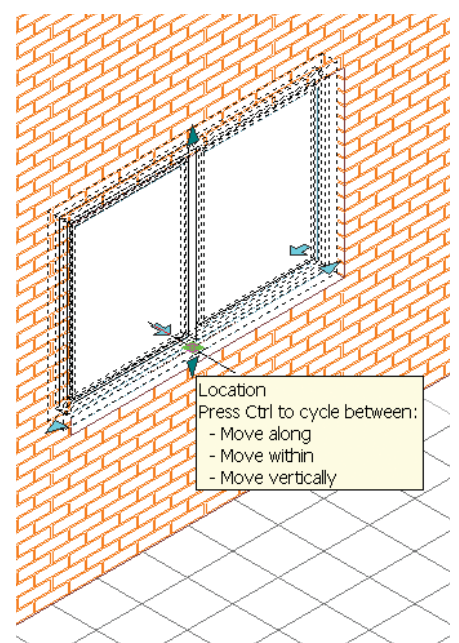
Accessing the Wall Style Browser.

**Tip 11: Live Section Display**

Did you know that you could enable Live Section displays from an ADT Section line object? Simply select the section line, right click and choose Enable Live Section. The live section will then display in any 3D view using that Display Configuration.

**Tip 12: CTRL key options on Grips**

After highlighting certain object grips, press the CTRL key to cycle through various options. For example, when moving a window, highlight a grip then cycle through grip edit options such as movement along, within and vertically along a wall.



Example of grip options available using the CTRL key.

**Tip 13: Overriding Staircase Calculation Rules**

If you find that some of your staircases break the calculation rules for their style and are drawn with defect markers then you can override the rules and get the stairs to draw regardless. Use the **STAIRCALCULATORLIMITS** command and set the value to "Relaxed", followed by the "View > Regen Model" command.

**Autodesk Revit 5.1 Tips and Tricks**

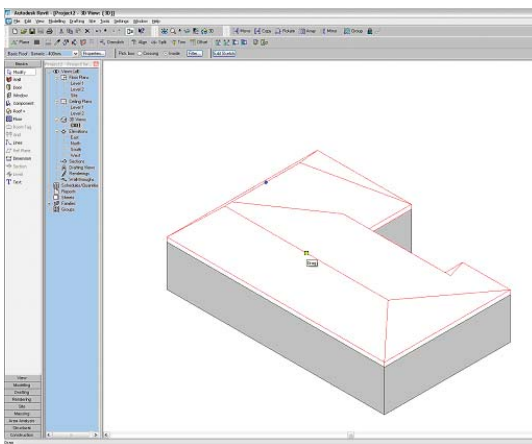
**Tip 1: Drawing A Wall**

When drawing a wall and the construction is back to front, use the spacebar to flip the wall over.



**Tip 2: Dynamic Roofs**

To dynamically change a roof ridgeline, switch to a 3d view and select the roof to reveal the grip points. Click on the grip and drag upwards to dynamically change the ridgeline.

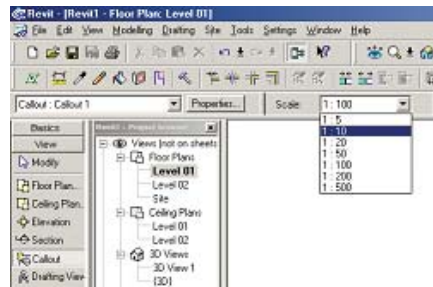


**Tip 3: Walls Too**

Slightly different approach this time. Hold the cursor over the top edge of the wall then using the tab key, cycle through the options until the top edge of the wall highlights grey. Left click to select the edge and the wall should highlight red. Holding down the left mouse button, drag the wall to the required height.

**Tip 4: Callouts and Sections**

When making new callouts or sections use the option bar to set view scale. Revit automatically assigns detail level to the new views depending on the view scale you set. This can save a few steps in workflow.



**Tip 5: Generating Levels**

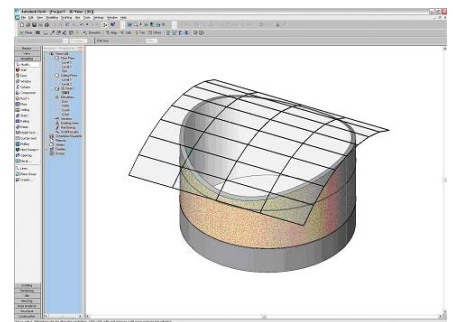
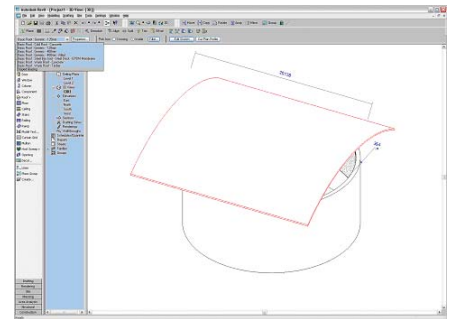
Use the array command to create multiple floor levels and produce all the associated views. Select one marker and then select the array command, key-in the distance required for all levels making sure the "move to 2nd option" is selected and then key-in the number of levels required.

**Tip 6: Building Grids**

Use the same method used in creating the multiple floor levels to create a building grid. Place one grid line making sure the numbering is correct. Select the grid and as before, use the array command to create the grid structure. The grid numbering will increment too.

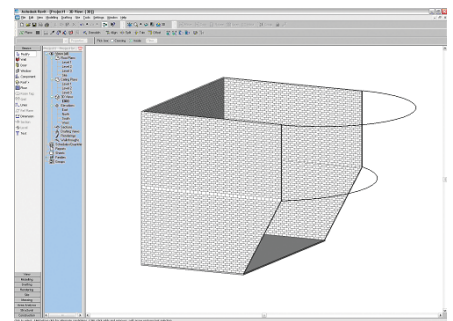
**Tip 7: Glazed Roofs**

Create a roof by using the extrusion option. Once created, select the roof and from the dropdown list of wall types, select the sloped glazing option. This allows the roof to be treated in the same way as a curtain wall. The roof structure is changed to glass and then the mullion grid can be created.

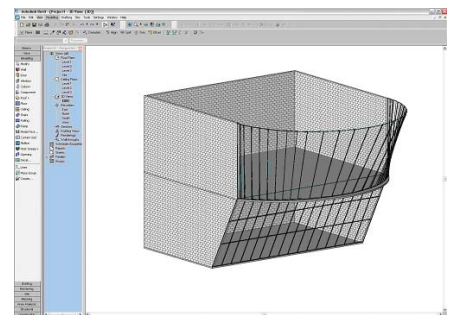


**Tip 8: Ruled Curtain System**

Use this method to create curved or sloping glazed curtain walls. In the example below, the walls were drawn minus the glazed sections. Then, using the "lines" tool, two arcs of different radii were drawn to represent the upper curved glazing section.

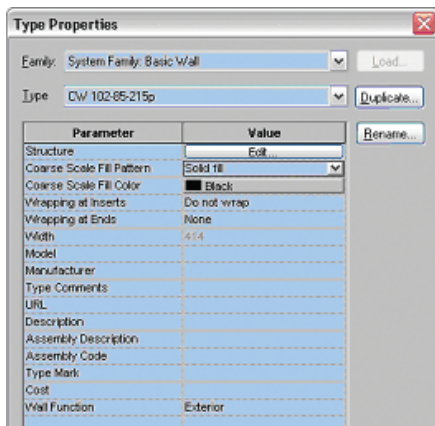
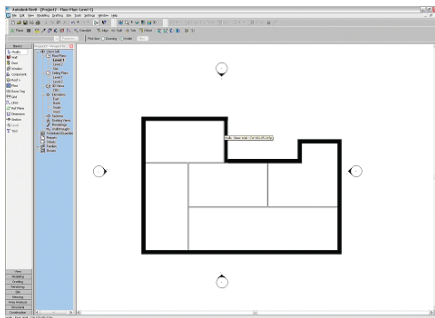


From the modelling menu select the "ruled curtain system option", then select the two arcs. Now create the mullion grid as before to complete the upper curved section.



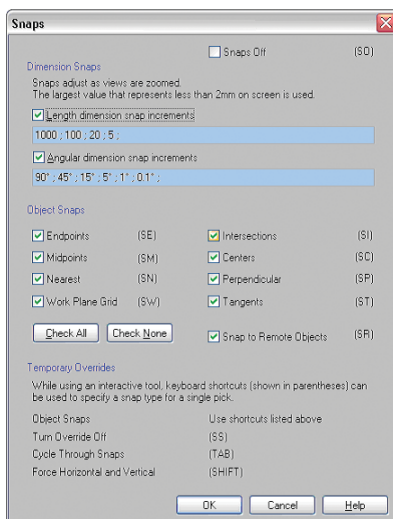
**Tip 9: Wall display**

If you want your walls to be filled rather than have structural composition, set the wall properties to have a solid fill coarse scale fill pattern and select the colour. The view properties will have to be set to coarse detail for this to work.



**Tip 10: Snaps**

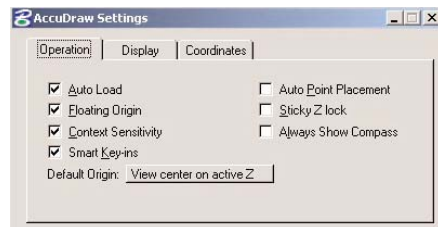
The snaps can be set or keyed in when required using the shortcut commands. SC for snap centre when attaching to the centre of a circle for instance.



**MicroStation - Tips and Tricks for the AccuDraw Tool**

When it comes to top tips for CAD software there can't be an application that has more shortcuts and "goodies" than the AccuDraw tool in MicroStation. AccuDraw is one of those tools that has a use in just about every operation that you wish to perform. Direct distance entry is, of course, a lifesaver in terms of time and ease but there are more tricks that you can use that are less well known or not documented at all.

Let's set up AccuDraw. Hit the "GS" keys in quick succession to get to the settings dialogue box. Didn't work? Then hit "Esc" to send the FOCUS back to the AccuDraw input box - you may need to do this from time to time.



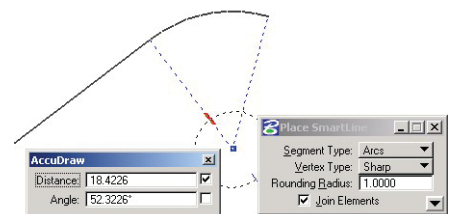
If you work in 3D then, normally X,Y,Z locks are cleared when you enter a data point. This setting is useful where you want to draw on the one plane continuously (i.e. you want to lock Z=0). While snapping to elements that are on another plane. With Sticky Z Lock enabled, the Z value will remain locked until turned off.

**Tip 1: SMARTLINE & AccuDraw**

One of the best speed and efficiency enhancing tool combinations that I know of is the combination of SMARTLINE, AccuDraw and the "Bump Tool". If you need to draw lines with tangential curves running back to lines again then this tip is for you. The Bump Tool key-in is the key directly below the Escape key on your keyboard.



It will "Bump" around most tool options, lines to arcs, tool methods such as "center", "edge" & "diameter" as circle placement options. Again AccuDraw MUST have the focus!



Bumping lines to arcs

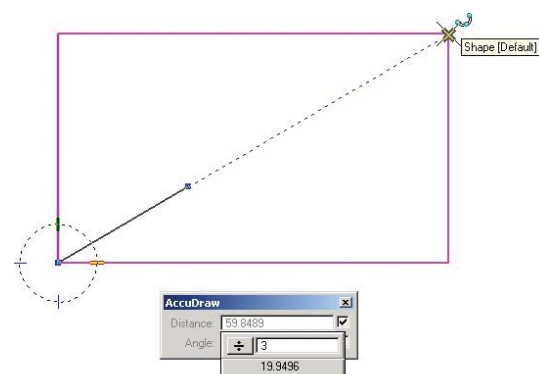
**Tip 2: Rectangular & Polar placement.**

Use Space Bar to toggle between Polar and Rectangular coordinates.



**Tip 3: Smart drawing using AccuDraw constructs with/and other operands**

Suppose you want to divide a distance, like this diagonal, without knowing dimensions or doing any kind of geometry. All you need do is this; snap and accept the bottom left corner, hover over the top right corner until Accusnap locates the corner. Now ensure the coordinate system is set to POLAR and then press "/" followed by the required divisor ie 3.



Dividing a distance

**Tip 4: Last distance marker**

Have you noticed the small perpendicular bar that appears as you trace out a line? This is the last distance entry marker showing the last recorded distance and allowing you to simply choose the last distance used. With AccuDraw focussed

and your cursor NOT locked onto an axis, select the "L" key. This prevents axis locking and removes the last distance entry marker. Also pressing "L" when the line is locked to an axis has the effect of "locking on" to that axis either vertical or horizontal.



Last distance recorded

**Tip 5 : AccuDraw Shortcuts**

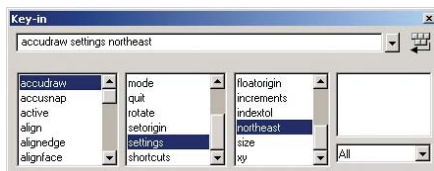
AccuDraw Shortcuts, what are they and where are they? AccuDraw is driven by a small text file called shortcut.txt, and here is the real way to make a difference, especially if you don't use 3D to often because you can create your own shortcuts to suit just the way you work. With the focus in AccuDraw hit the "?", from here you will see how to create your own shortcuts, but beware save the original shortcut.txt file first!

**Tip 6: X Y and Eastings & Northings display**

Ever wish your AccuDraw window was N and E instead of X and Y? Of course you can change that! In the Key-in window (utilities>key-in) type:

"accudraw settings northeast"

Your AccuDraw window will look like this:

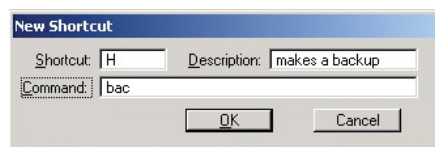


Changing XY to NE co-ordinate readout

To return the AccuDraw window back to the XY settings type "accudraw settings xy" in the window.

**Tip 7: Shortcut for backup**

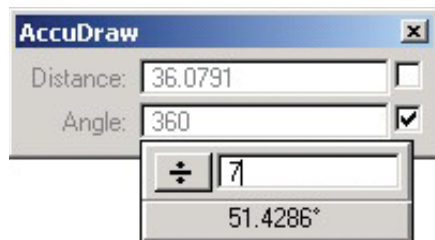
A great new shortcut to create is one that makes a backup of your work "on-the-fly" so to speak. This is wise before a major change or before plotting. Simply pressing the "H" key will commit a backup! Watch the information in the very bottom left-hand edge of the MicroStation window to see where your backup is going. Change the config variable MS\_BACKUP to redirect your backups.



See Tip 5 - AccuDraw Shortcuts

**Tip 8: Using the calculator**

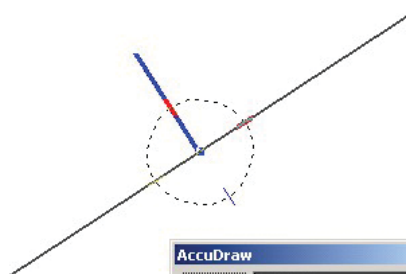
AccuDraw, as well as every other key-in numeric entry field, can take a calculation. Don't worry about working out an angle as a portion of 360 degrees, simply enter the calculation as 360/7 to give you sevenths of a circle or 51.4286 degrees.



Dividing an angle

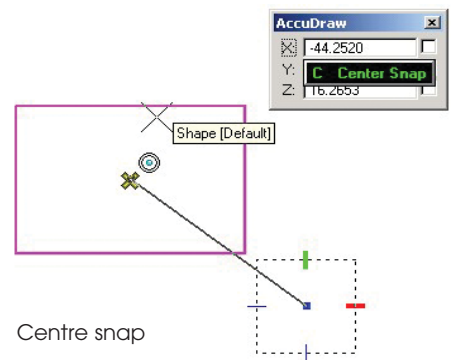
**Tip 9: Access to SNAPS**

Of course once you have AccuDraw running you can virtually get rid of the SNAPS toolbar forever since all but the most awkward snaps are helped by a combination of AccuDraw and Accusnap.



Perpendicular snap

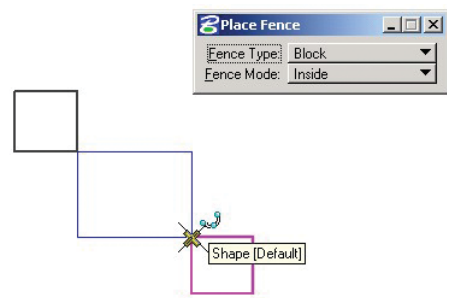
With Accusnap running you can find points to snap to without the need for tentative snapping and then with the focus in the accudraw field simply type I or C to be able to snap to Intersections or Centres. Perpendicular Snap becomes a thing of the past! (Press N for nearest mode)



Centre snap

**Tip 10: Snapping a fence into position**

Last, but not least, is this little gem. Without this you currently do not have the luxury of snapping a fence into position without using the tentative snap process, Hhmmm? Well, try this. Hold the shift & control keys together to use Accusnap with fences and the Accusnap feature.



shft ctrl snaps fences

**Share Your "Tips and Tricks"**

We hope that you have found all of the "tips and tricks" for the various products in this article of use.

If you have your own "tips and tricks" that you would like to share simply email them to dpj@excitech.co.uk and we'll look to publish them later with your name.



See page 57 for your CPD self assessment form

MORE INFO 3201 see inside back cover