



# MicroStation Productivity Tips

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*Simple productivity techniques for starting a project*

**T**here are two ways to start a project in MicroStation, open a new file (the hare approach) or open an existing file (the tortoise approach). The hare approach to starting a project is to open MicroStation by typing `ustation`, which brings up the default workspace and then selecting New under the File pulldown menu. By typing a unique design file name in the box a new file is created based on a default seed file delivered with MicroStation. This is a relatively painless, straightforward and quick approach. What I call the tortoise approach is a bit more time consuming initially but provides more flexibility and intelligence as the project evolves.

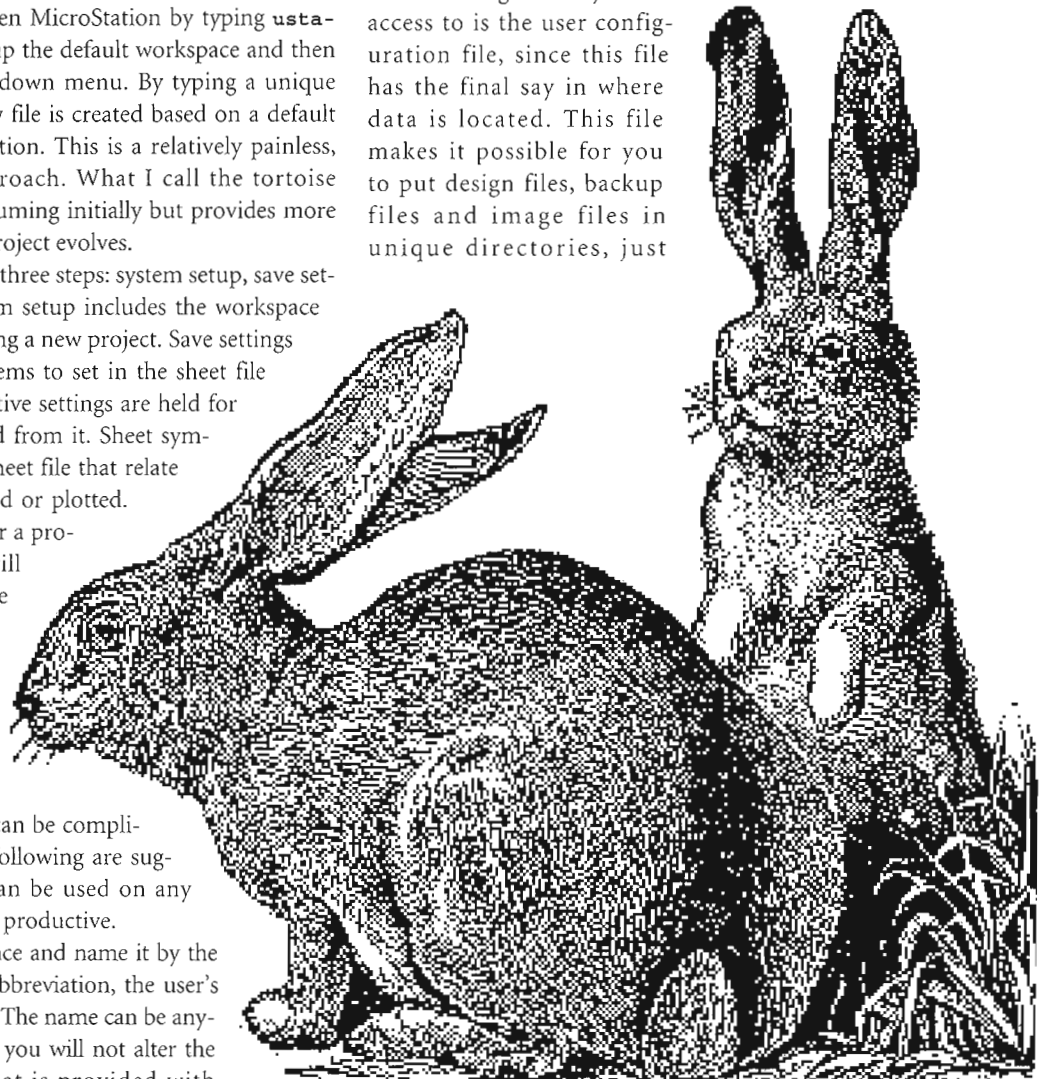
The tortoise approach involves three steps: system setup, save settings and sheet symbology. System setup includes the workspace and files to be loaded before starting a new project. Save settings involves creating a checklist of items to set in the sheet file and then saving settings so the active settings are held for this file and any future file copied from it. Sheet symbols are elements created in the sheet file that relate to the sheet of paper to be printed or plotted. Once these steps are completed for a project, many unforeseen hassles will dissolve into the background as the project progresses.

## SYSTEM SETUP

System setup is the implementation of a workspace and related files. A workspace can be cooperative and productive or it can be complicated and time consuming. The following are suggestions and guidelines which can be used on any project to make it cooperative and productive.

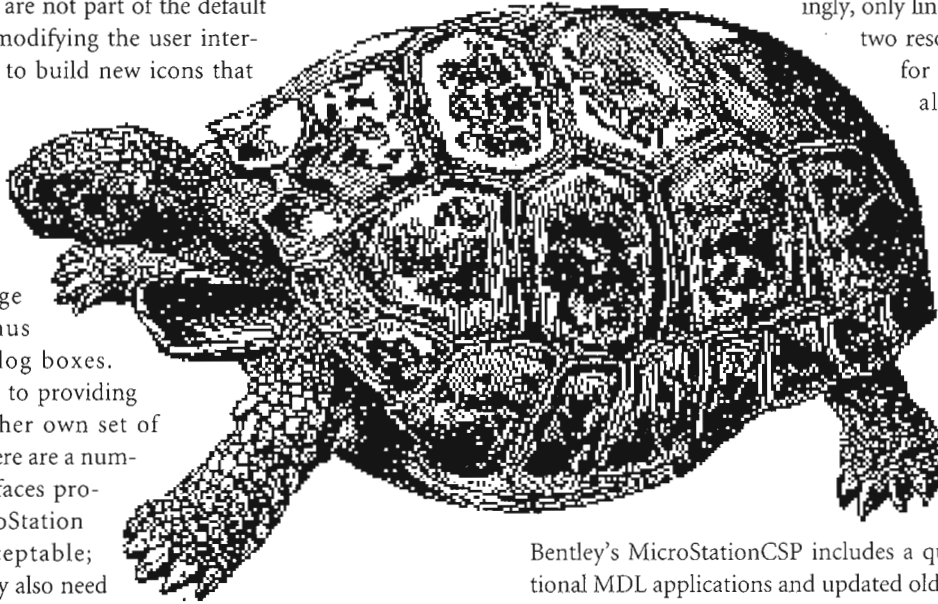
To begin, set up a new workspace and name it by the project title, or by the company abbreviation, the user's name or any title that makes sense. The name can be anything other than default, that way you will not alter the workspace named "default" that is provided with MicroStation. Within the new workspace there are three areas of interest: the project, the interface and the preference file. Using the drafting room workspace analogy, let's develop a clean and orderly workspace. Compare project configuration files to flat files or filing cabinets (where you store drawings and where you find data about the project). Compare the user interface to the tools used in a drafting environment (pens, pencils, triangles, parallel bars). Compare preferences to the actual furniture (lamps, adjustable chair, flat or tilted drawing surface).

Assuming the system manager sets up MicroStation and will deal with most of the configuration variables, the only file a user generally needs access to is the user configuration file, since this file has the final say in where data is located. This file makes it possible for you to put design files, backup files and image files in unique directories, just



like putting construction drawings in one drawer and presentation drawings in another. Under the User pulldown menu, go to User Configuration Variables, select the variables you want to edit and set up unique directory locations. Here are examples of configuration variables that you might adjust in everyday activities: translation files, function key menus, user preferences, backup files, image out files, seed files and cell libraries.

The user interface can be developed to suit the needs of an individual user, a project team or the whole office. Perhaps there is a need for unique tools or keyins in MicroStation that are not part of the default icon system. By modifying the user interface, it's possible to build new icons that will invoke that keyin or MDL application. Along with setting up new icons, it's possible to rearrange pulldown menus and modify dialog boxes. This is analogous to providing every user with her own set of drafting tools. There are a number of user interfaces provided with MicroStation that may be acceptable; however, they may also need adjustment for isolated situations. The basic idea is to develop an interface approach for the project and edit the interface as needed to make the tasks at hand as productive as possible. The following illustration shows an interface with changes in both the pulldowns and icon palettes.



Preferences give you the ability to adjust minor things on the desktop to your personal satisfaction. Much like a tilted table, lamp position and chair height, preferences can be adjusted for GUI color options, cursor size and pop down menus. To change from the default preferences:

- In the tool palette category—toggle off auto focus tool settings, toggle on all pop downs in tool settings, and toggle on auto open tool settings.
- In the text category—set Edit Text in the command window.
- In the display category—toggle background from black to white.

Note that preferences may be set up for every user individually or the same preferences may be set for the entire team on the project.

Flexibility is the great thing about workspaces. However, with flexibility comes a multitude of options that have to be sorted through and someone has to be responsible for the guidelines of a new workspace. A workspace is always in flux. Keep in mind that if a new workspace is developed, it will be used and will transform as new techniques and options become available.

In addition to creating the workspace there are a number of resource files to collect which are beneficial for a new project. Resource files include custom line styles and custom font libraries. Copy an existing set or create new files, but give them a name related to the active project. Then, if a file is distributed to

another user, these two resource files—which will include any custom lines or fonts that were created—can also be sent to the user. If the configuration variable is set accordingly, only lines and fonts added to these two resource files will be available for a user to work with. It is also a good habit to add the letters “ft” or “ls” at the beginning of the filename, so the font and linestyle resource files can be identified at a glance.

MDL (\*.ma) files and User Command (\*.ucm) files are productive tools which can be developed in house or bought from various vendors.

Bentley's MicroStationCSP includes a quarterly CD that has additional MDL applications and updated older ones. These files provide tools not found in MicroStation as it's unwrapped which can definitely boost productivity. A few files to be aware of are: atools.ma, rfmold.ma, viewctrl.ma and uc=liftdim. If these MDL applications are not currently being used, try to obtain them for the project. Atools.ma is an area calculator and text placement tool. Rfmold.ma is a modification tool for replacing an old reference file with a new one in the same relative position. Viewctrl.ma is a viewer for 3D files that provides true definitions of view space. The User Command

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**uc=liftdim** is a dimensioning tool that provides a toggle to either hold dimension strings in line or lift dimensions that are too small to fit in standard position.

There are many MDL and UCM files that will continue to make MicroStation the best answer to productive CAD environments. Settings Manager is an MDL application that comes integrated with MicroStation and enables a functionality users to create specific commands and settings without learning program code for either User Commands or MDL applications. Settings Manager has a limited range of capabilities, but can be very productive when used to set up standardized linestyles, cells, or combinations of elements with unique levels and colors. Some examples are included with MicroStation for doors, toilets and working units. Settings Manager can work with any element that can be drawn in MicroStation. A project may have unique style files to be used for text or dimensioning that can be set up here. Any Settings Manager files that are unique to the project should be added to the project directory.

Cells make a repetitive graphic easy to work with in placing and replacing. Cell libraries should be developed that

are subject oriented. Instead of one large library that takes time to scroll through, break up large libraries into small subject oriented libraries like toilets, doors, windows, furniture or any other topic that is unique to the project. Cell libraries should be developed for both metric and imperial libraries. Place the \*.cel files under the appropriate workspace module directory (wsmod) for this project.

Depending on the plotting system to be used for output, make sure a plot driver is available for each printer or plotter in the proper unit of measure (metric, imperial) for the project. Check that third party plotting software is set to work with the master unit of measure. It's good to run a test print to verify black lines are coming out black on printers. If the printer is not plotting black then edit the respective \*.plt file under the plotcfg directory. Add the following lines to the file:

```
;black lines
pen(1)=(1)/rgb=(0,0,0)
```

Lines will come out black. The default border edge might need adjustment depending on the printer being used. You can do this in the same file. Data files are

found under the workspace module directory data. Set up a unique color table or use the default. The first 63 colors corresponding to the 63 levels in MicroStation can be a simple system as in *Figure 1*. The other 193 colors are gray.

Function keys provide a quick keyboard option to perform a command without the mouse or pulldowns. They can be very productive for a lot of repeat commands. Function keys can also save having to remember all the keyins for MDL applications. Create a personal menu or develop one for the whole project by Save As under the Function Key dialog box. Make sure the \*.mnu file is saved to the proper location for user access, or that it is the only menu available and loads automatically.

A level chart is necessary for a productive work environment. All elements may be placed on one level. However, this is considered sloppy drafting. Make sure levels are developed relative to the specific discipline or part of a project. For example, a structural plan may have different levels than an electrical plan and a floor plan may have levels unique from a reflected ceiling plan. The level name file is a \*.lvl file which can be

## Does Your Menu System...

	Support Tear-Off Palettes?	Yes	???
	Make Icons from DGN Elements?	Yes	???
	Include Text from 36 Raster Fonts?	Yes	???
	Create Any Size or Shape Icon?	Yes	???
	Draw Complex Icons in Seconds?	Yes	???
	Provide End User Menu Layout?	Yes	???
	Distribute All Menus in a Single File?	Yes	???
	Modify other Application's Tool Palettes?	Yes	???
	Require Extensive Pixel Editing?	No	???
	Seem to be Boring, Tedious, Laborious?	No	???
	Strain the Eyes of Both Developer and User?	No	???

# ToolBox

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a quick reference guide for those unfamiliar with the level scheme. Level names taken from translation files may be an orderly way of setting up levels. Grouping the levels can also provide added flexibility, such as group walls that include all interior and exterior types of walls on various levels. The group may be manipulated just like one level can be. By pulling down the Level Name dialog box, you can see a list of various level schemes. Develop these charts to suit the needs of a project and add them to the data directory under MicroStation before the project begins.

Once the workspace is set up and the various resource files are loaded, the system is ready for a productive project experience. Now it's possible to take a couple of steps further and make the design file more intelligent.

### SAVE SETTINGS

Once the system is set up, open a new file in MicroStation so the active parameters can be set for the project. Name the file border.dgn. The following is a checklist of attributes to set in the file before Save Settings is invoked.

Set Working Units to imperial or metric. There are four boxes to key in; use the values listed in *Table 1* for various projects, depending on the end result desired.

The Global Origin setting creates a relationship between a position in the design file that is 0,0 and any other position in the file. **GO=\$** sets it to the center of the design file. **GO=0,0** will set it according to the next datapoint placed. Keyins based on **xy=** will be placed relative to the global origin position. A global origin is important if a benchmark is necessary, or if you are working with elements to be placed based on a 0,0 absolute coordinate system. Many projects that do not need a benchmark and absolute values can be placed and measured without using either the default or a new global origin. Set the global origin if necessary, otherwise leave the default setting alone.

Coordinate readout gives unit labels to measure commands and options for displaying the degree of accuracy. Set the coordinate readout to the unit labels

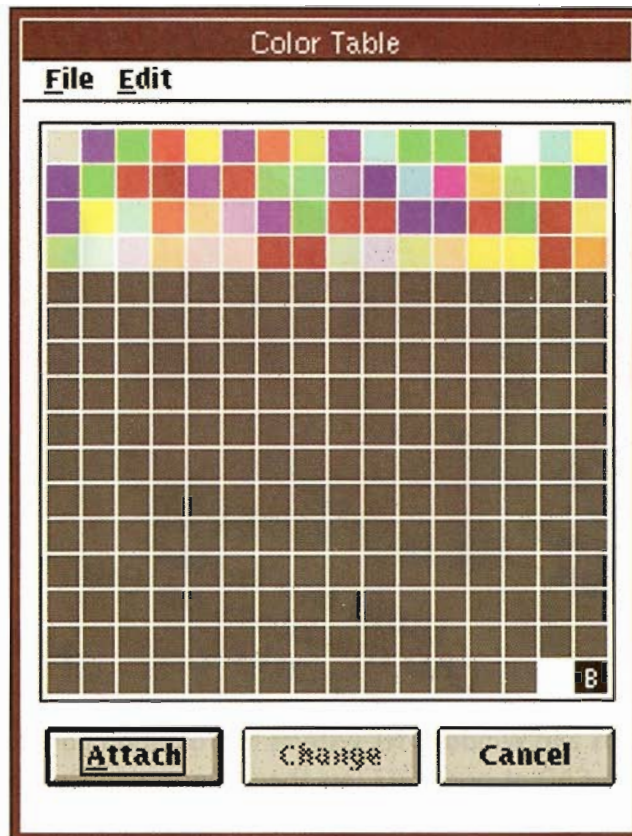


Figure 1

desired relative to the units set up in working units. Display the level of accuracy to readout in decimal points. Keep in mind this does not affect the dimension readout that has a separate dialog box for accuracy.

The Locks Settings dialogue box is a collection of locks to be toggled on or off. Set snap divisor=2, set Graphic Group toggle on and set Fence Lock to inside. The other settings can usually be left in the default modes.

View attributes settings make updates faster by not showing all elements in a view. They also help present elements with desired drawing aids included, like a background image or fonts filled solid. Toggle on the settings and Select All or apply by individual views.

Active level, color, style, weight and snap options are the default settings that will read out at the top of the command box every time the drawing is opened or until the active settings are changed and the file designed. A generic setup might be (level=1, color=1, style=0, weight=1, and snap=key-point). Set active angle to 0 (aa=0). Set active scale to 1 (as=1). Open the number of views desired from 1 to 8 and tile accordingly.

Set active text and dimension attributes in their respective dialog boxes under the Element pull-down. These settings are going to be unique to the project and need to be thought out in advance. Text line spacing and justification are examples of attributes to set in the Text dialog box. Dimension line, witness line, stroke and text attributes can be set separately in Dimension Attributes dialog box. Although the actual text height is always going to be in flux for a project as text is placed for various reasons,

set a default text to be typical of the majority of text placed on the project.

After making the suggested adjustments to the file, Save Settings under the File pull-down menu, use <CTRL-F>, or the keyin **file design**. This command saves settings, as the name suggests. Remember, it has no bearing on data. MicroStation saves data automatically as it is input.

### SHEET SYMBOLS

Now that you have set up the system and saved the settings, there is one more step before getting started. A sheet file (border and title block) should be drawn and sheet symbols placed outside the sheet border. The sheet border is drawn one time for the whole project. The border should be drawn at true size relative to the

For Imperial	For Imp/Metric Conv.	For Metric Meters	For Metric Millimeters
'	12	m	mm
"	254	mm	0
12	n	1000	1
8000	1524n pu/ft	10	10
	127n pu/in		
	5n pu/mm		
	5000n pu/m		

Table 1

master units. If the master units are millimeters, draw the border in millimeters, the same size as a real-world border sheet. The first line placed in the file can be started at the global origin with the keyin (**xy=, , |1**), which sets the x and y coordinates to 0 in view 1. Every other file will have the sheet file attached as a reference file and possibly scaled up or down as necessary. The rest of the keyins can be relative to this point.

Sheet symbols are usually groups of elements that make up typical drafting notation, such as a spot elevation, a section mark, a door number or grid bubbles. You will want these symbols to remain a constant size on any sheet, regardless of the plotting scale. Draw sheet symbols the correct size relative to the sheet file, on the correct level. Collect them as individual graphic groups and place them outside the sheet file printing area. When the sheet file is scaled up or down as a reference file, the sheet symbols are scaled as well. With the Reference File Locate toggle on, and the Graphic Group Lock toggle on, sheet symbols may be copied into the active design file and by default will be relative to the sheet file and plotting scale.

Once this task is completed, Save As and name the new file blank.dgn. In blank.dgn, fence everything drawn in the file and delete. This becomes the first design file saved from the original file. All of the save settings attributes set up previously are automatically saved as part of the new file attributes. Attach border.dgn as a reference file and scale the reference file according to the scale drawings that will be plotted. In metric for a 1:100 plot, the reference file would be scaled up 100 to 1. For the imperial system, a 1/8=1-0 plot would be scaled up 96 to 1.

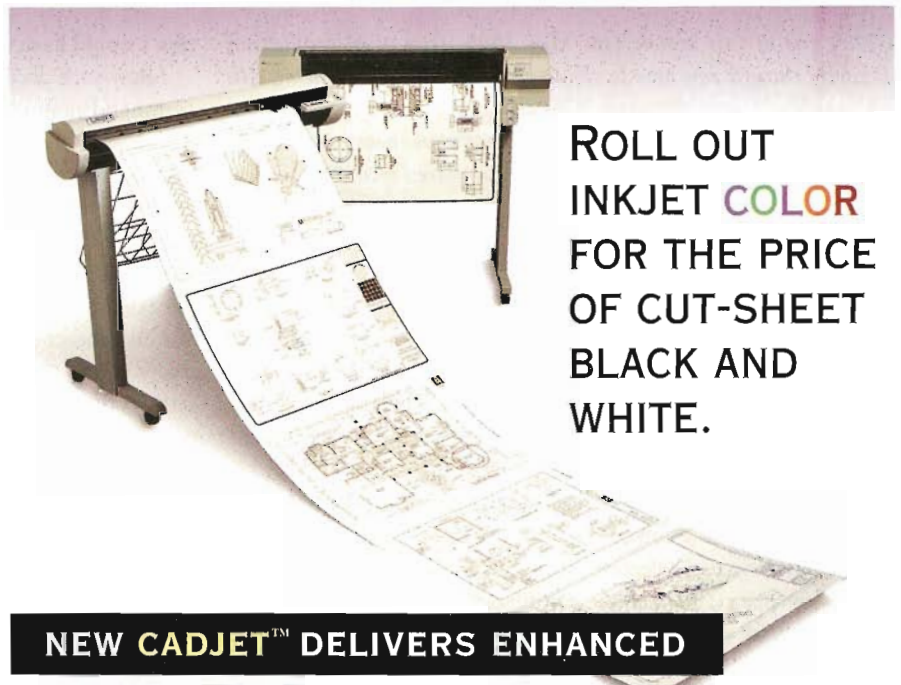
Use the blank.dgn file as a template from which to create new files based on the file attribute settings saved and the reference file attached and scaled. When new files are created, all settings will be present in the new file, including the reference file scaled accordingly. Data placed inside this border sheet will pancake from one design file to the next. This blank.dgn can be incorporated into the seed file directory and used as a seed file. However, with multi projects in an office, one border sheet will probably not be acceptable for every project. Each project that needs a unique border sheet can set up the first file as demonstrated

above and then make copies for new files from it.

The three-step tortoise approach will pay for itself down the road when dimension attributes are already set up when you need to place dimensions, when grid bubbles need to be placed, or when area calculations need to be calculated and text placed with the value (atools.ma). The system is not foolproof, and it is only one of many ways to set up MicroStation as a productive work environment. These guidelines can be followed until isolated situations require

another approach. Do not fall into a habit and set up strict rules that never change, but keep this checklist handy and get off to a productive start. Chances are the hare will soon be asking for advice when the tortoise finishes the project on time.

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