



**AUGI CAD Camp - Denmark**  
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# AutoCAD 2007

## Plotting and Publishing from Start to Finish with AutoCAD 2007

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**S5-1**

### **Course Summary:**

This course offers both longtime AutoCAD veterans and new users a chance to expand their knowledge on the plotting and publishing features of AutoCAD 2007. This course will walk you through practical examples such as: page-set concepts, creating layouts, PC3 files, color-dependent and named plot styles, and publishing sheet sets. It will also cover batch plotting drawings as well as multi-sheet DWF file plotting.

### **Instructor:**

Paul Oakley is Director of Oakley-CAD Services Ltd and has 20 years' extensive experience within the AEC industry, working as both architect and CAD manager for major Architectural practices such as Broadway Malyan and PRP Architects before starting his own CAD management consultancy. As a consultant he has provided services to clients ranging from Autodesk to individual Architectural practices. Paul runs CAD management, bespoke AutoCAD and ADT training courses and has also presented at major conferences, plus featuring in industry press. Paul has been involved within the development of ADT with Autodesk for several years and chairs the technical forum for the ADT Community group. He has also been involved in various industry led Building Information Modelling initiatives, such as Teamwork and more recently Avanti.



Autodesk User Group International

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## Introduction

Plotting and publishing information are specific areas which can provide huge productivity gains to those who do it right, with major pains, loss of time and additional cost to those that do it wrong. Through this session we will look at the various options to publishing data and the different methods of plotting available. We will also explore some of the management methods of controlling your published information and associated methodology that goes with these.

The general requirement for CAD standards and reproducible data specifically applies to Plotting and the Publishing of CAD drawings. There are specific requirements to ensure this and if these are followed will aid any company. As with all standards the prevailing factors are:

- Quality of product
- Reducing Risk
- Increasing Productivity

In order that this can be successfully achieved a number of parameters need to be met which will aid the plotting and publishing process. These are:

- Standard plotter setup, along with configuration settings
- Standard pen settings, either in the form of CTBs or STBs
- Standard Templates
- Standard Page setups.

This session will consider how to set up and configure the above and then the different methods of plotting and publishing data.

### What format?

In the ideal world CAD data would only ever be issued in one format, to everybody and this would meet all of their needs. Autodesk have done their utmost to aid this with the ability in AutoCAD 2007 to XREF DWF files into dwg files. Therefore in theory the creation and issuing of DWF files should allow a single distribution model for electronic data, which can be plotted and used as overlays by other CAD users.

However, by the inclusion of a PDF writer and the soon promised 'Save to DGN', Autodesk have recognised the real world where users have to issue their data in many formats. How a company actually goes about doing this can improve their productivity and therefore their profit margins considerably. This session will look at the various requirements for plotting and publishing data and how these can improve their workflow.



## Centralised Network Configuration

The most economical method of installing your AutoCAD Plotting and Publishing options is to create a centralised network configuration for your plotter drivers and pen settings and then point your AutoCAD workstations at this. Due to slight differences in plot drivers and configurations it is best practice to create a different set of configuration files for each version of AutoCAD that is available on your Network (AutoCAD 2006, AutoCAD 2007 etc...)

In order to plot AutoCAD uses the following file types:

### Plotter Files

**PC3 files** - These hold Plotter Driver information such as the Port, Media Size and Type, Resolution, Color Depth and Raster Quality and Custom Properties.

**PMP Files** - These files hold specific information on the plot settings such as Custom Paper Size, Filter Paper Sizes and Plot Margins.

### Pen Settings

**CTB's** - Color based Pen settings

**STB's** - Style based Pen settings

Copy the various support files from the C:\Documents and Settings\All Users\Application Data\Autodesk\AUTOCAD 2007\enu Directory to your Network Drive. In this case Q:\AUTOCAD 2007.

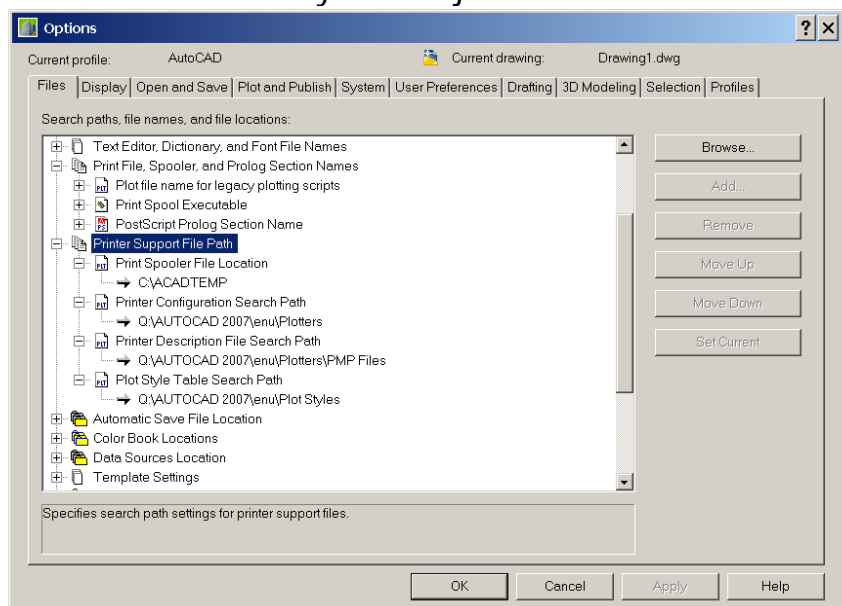
### AutoCAD Options

Within AutoCAD under the Options Dialog the Printer Support File Paths can be found under the File Tab. Changes these to look at the centralised Network files you have just created.

The Print Configuration path is the Network location where the Plotters PC3 files are located.

The Printer Description File Search Path is the location of the Plotter PMP files

The Plot Style Table Search path is the location of the Ctb's and Stb's.

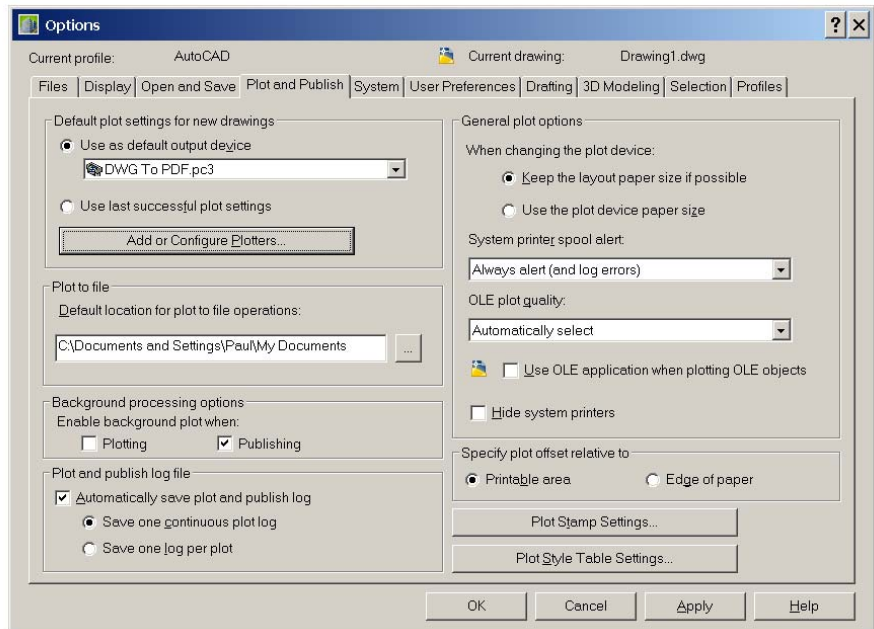


There are various other settings that can also be set under the Plot and Publish tab.

Of specific interest are:

- The Default plotter
- Hide System printers
- Enable Background plot
- Save one continuous plot log

The Plot Style settings relating to plotting using Ctb's or stb's can be accessed via the Plot Style Table Settings button



As well as the Printer Settings there are many settings that can be controlled via the AutoCAD Profile. AutoCAD Profiles can be saved using a Profile file with .ARG extension. Save this ARG file on the Network location for adding to other workstations. This can be saved and imported under the Profile Tab of the options dialog.

By carrying out the above we have created central network configuration files for all our plotter and pen settings and pointed our workstations at these settings. The next step is to create the appropriate plotters and drivers and configure them to meet our requirements.

The other important aspect of a centralised network configuration is that the configurations stay consistent. The safe way of doing this is to lock the appropriate support files either by using the lock attributes to the folder and files or by using windows security via administration rights.

## AutoCAD Templates

Centralising the AutoCAD templates with specific page setups will also provide productivity gains and aid the plotting and publishing process. Additional drawings with standardised Layouts for the various title sheets at A3 to A0 can also be provided. These should include the necessary page setups that will be discussed later in the session.

The template file and the QNew file can also be configured within the Options / File dialog to ensure that the correct template is used by all the Users.



## Plotting Devices

### Plotters and How to configure them.

AutoCAD has three different methods of installing printers and plotters and their associated drivers.

The three methods are:

- Windows System Drivers
- Optimised Windows System Drivers
- Heidi Plotter Drivers.

It is important to know which of these is the best method to configure your specific plotters as most Manufacturers drivers are optimized to take advantage of the driver methods in different ways. As a general rule the following applies, but it is best to check with your specific plotter manufacturer what is the best specific driver for your version.

Plotter	Driver Option
Hewlett-Packard plotting & Print devices	Optimised Windows System Drivers
Kip. Oce, Xerox & most non HP Plotters	Use the Heidi Plotter Drivers

### Installing Windows System Drivers

Window System Drivers are not installed through AutoCAD, but as the name suggests through the Windows Environment. Ensure that the correct Window Drivers for the devices are being installed by checking with the Manufacturers website. Also install the appropriate drivers for other Window versions or O.S's that exist within your Network.

Naming of the system printer and the drivers description is important and these should be kept short as they are carried through to AutoCAD. In specific instances these can affect the use of specific driver settings where the total length of the name (UNC path plus printer name) exceeds 32 Characters.

Configure the Plotter drivers with the appropriate settings and paper sizes. Add any custom paper to the Windows Printers here if you are going to use the Windows or Optimised Window drivers.

### Optimised Windows System Drivers

Having installed the Windows System Driver the add a plotter option can be found from one of the following AutoCAD menus:

- AutoCAD File Menu \ Plotter Menu
- AutoCAD Tools Menu \ Wizards \Add Plotter
- Options Dialog \Plot and Publish Tab \ Add or Configure Plotters



- Command Line = PLOTTERMANAGER
- Windows Control Panel – Autodesk Plotter Manager

### Adding a Heidi Driver (My Computer)

Notice that when the plotter manager is accessed the Network installation path is automatically found, as this is the current setting in the AutoCAD profile.

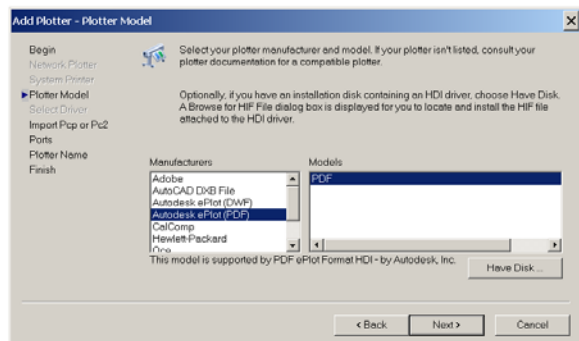
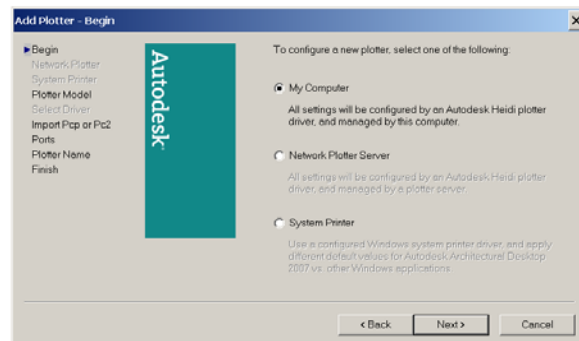
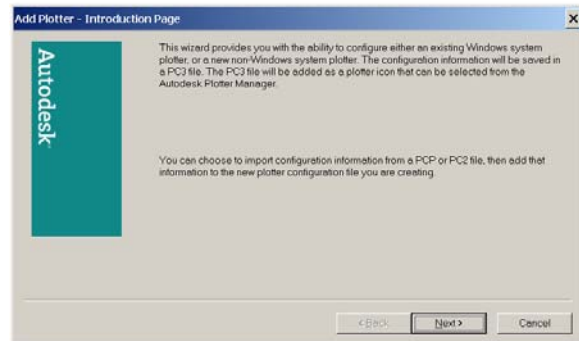
Under the 'My Computer' option of the plotter install are a series of Manufacturer. Included under the Adobe option are various methods of creating postscript files that are useful to import to Adobe software such as Photoshop etc.

There is also an option under Manufacturers for Raster File Formats. This includes options such as Tiff, JPG, BMP etc. These again can be useful for exporting data to other specific software.

One of the new features of AutoCAD 2007 is the ability to create PDFs. This driver should be installed as default but it is worth checking that it is available.

Although the 'My Computer' option has been chosen to create this driver as both the PC3 file and the PMP file will be stored on a central server this device will be automatically available for all workstations that have been configured to look at the Server via the AutoCAD Profile.

The Various Network installs follow a similar pattern where a PC3 file is created for each device and a relative PMP file with the appropriate paper setting etc.



## Plot Styles

There are two types of plot styles available within AutoCAD, which are defined in the drawing templates. These are Color dependent plot style tables (Ctb's) or Named Plot style tables (Stb's). It is best practice to adopt one of these plot styles and develop centralised styles that are available to all users. Specific standard plots styles should be created so that All Users plot the same.

When drawing in AutoCAD best practice dictates that whether using color based plotting or named plot style based plotting that this is defined at Layer level and not on individual objects.

### Color Dependent Plot Style tables

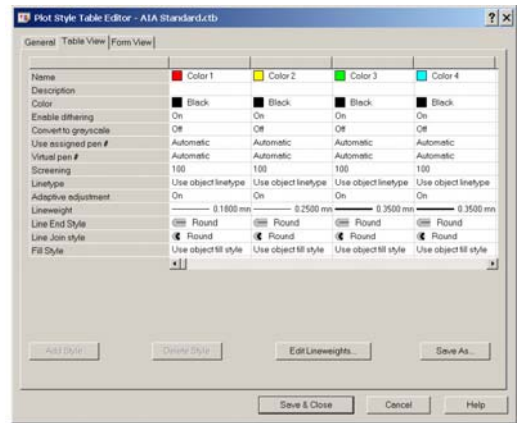
Ctbs using Color dependent plot styles are the original method of mapping how an AutoCad entity plots, based upon its Color. Ctb files store the mapping of the default 256 AutoCAD Colors to the plot Color, Lineweights, Line End Style, Line Join Style etc.

The majority of users still plot using Ctb based plotting as this is the traditional method of plotting and most AutoCAD standards are therefore built around this.

General practice was originally to use the first 8 or 10 colors as Black and then use the other 245+ for Color plotting. With the introduction of True Color and the Color books the use of all 256 colors for black has been adopted in various standards as illustrated in the Tri-Services Colour Mappings PDF file that is included within the Plot styles Directory of AutoCAD.

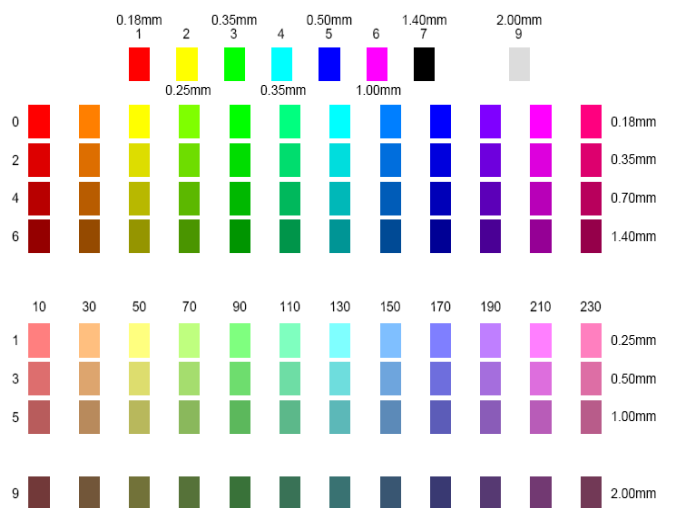
This provides a specific standard of mapping a range of colors to a specific pen weight.

Any layer or AutoCAD entity mapped to a True Color definition will ignore the CTB and plot using that True Color definition.



*The AIA Standard.ctb file based upon the Tri-Services color mappings*

*The Tri-Services color mappings pdf shows the mapping of specific color ranges to pen weight settings.*



## Named Plot style Tables

Stbs contain Named Plot Styles which can be defined by the User. Named Plot styles make no reference to the AutoCAD color. Instead a name is defined such as "Fine" and then different plot settings such as Lineweights, Linetypes, fill patterns etc are applied to it. As many or as few plot styles can be defined as required within the Plot Style Table. The original thinking behind plot styles was to have a plot style defined for each pen such as fine, medium, thick etc.... With the introduction of the Line weight property for AutoCAD Layers and Entities the need to define this at the Plot style level has been negated.

The new AEC Standard.STB simplifies Plot Styles to the minimum with only five Basic plot styles. As all Lineweight, Line End Style, Fill style etc are set by object within AutoCAD the only properties to be changed by the Plot style are the plotting color and the screening. The five plot settings are:

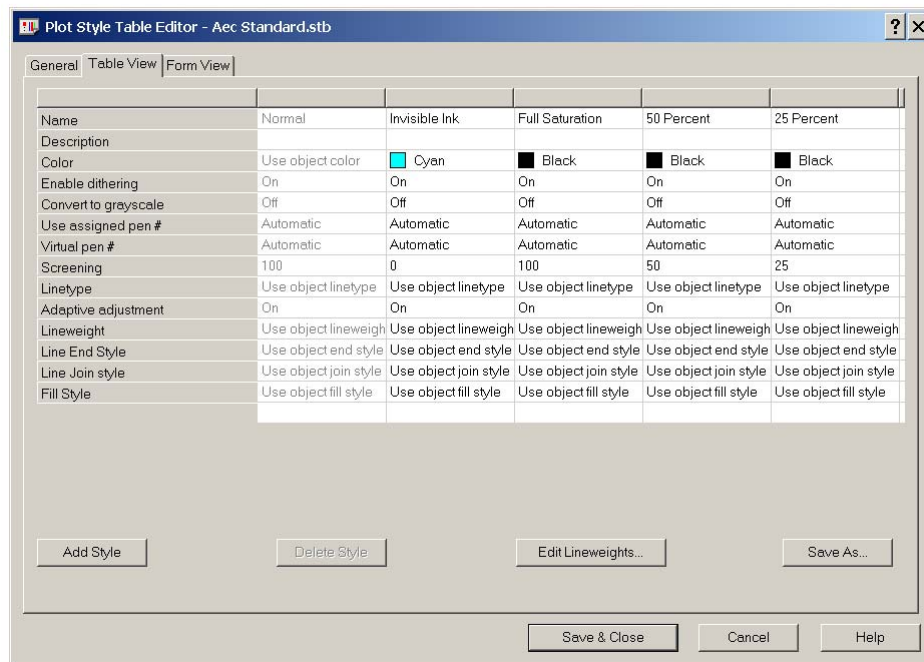
Normal: Where the color (including true color) is defined by the AutoCAD Layer or Entity

Invisible Ink – This uses Cyan for creating Blue Print

Full Saturation – Where the plot color is defined as black and screening is 100%

50 Percent - Where the plot color is defined as black and screening is 50%

25 Percent - Where the plot color is defined as black and screening is 25%







## Converting from Ctb's to Stb's and back.

If you receive data from an external source that uses a STB table and you wish to convert to a CTB then you can use the CONVERTPSTYLES command to remove the Named plot style settings.

To Convert a CTB based drawing to an STB Table drawing requires two steps. First you must convert the CTB table file to a STB table file. This creates the mapping that AutoCAD will use in the dwg conversion process. Type CONVERTCTB at the command prompt and select the CTB table that is used by the drawing. Then name the STB table in the Create File dialog box. This will create a new STB file. Edit the STB file through the Plot Style Manager with appropriate naming conventions. Then type CONVERTPSTYLES at the command line. You will be prompted to select the STB file for AutoCAD to map too and the conversion will be completed.

## AutoCAD Drafting for Consistent plotting and Publishing

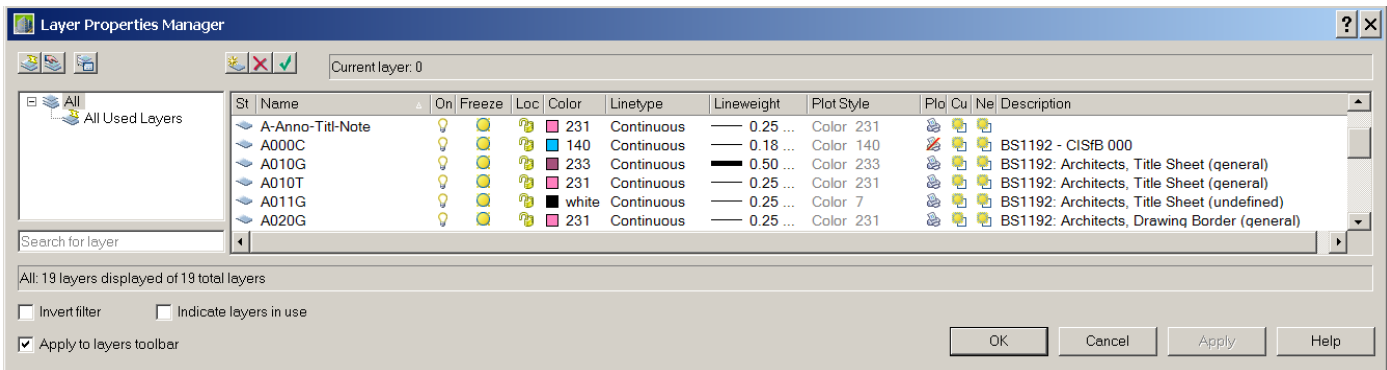
AutoCAD provides enormous functionality and generally has many ways of controlling how entities are plotted or published. Here are a few basic drafting tips to aid that.

### Layers

**Layers** – Control all Lineweights, line types, etc by Layer and not at Entity level. This removes a level of editing and checking when drawings do not plot at expected. It also makes it easier for others to manipulate how your drawings plot when Xrefed by using the Layer Control.

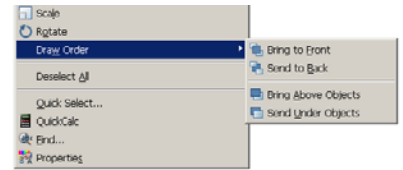
**Defpoints** – Defpoints is a special AutoCAD Layer used by AutoCAD for placing dimension definition points and this is defined as a Non plottable Layer. There are issues with freezing the Defpoints layer.

**Non-Plottable Layers** – AutoCAD has the ability to make specific layers Non Plottable. Within your Layer standard you should define specific Layers that are Non Plottable and the Naming convention should highlight this. It is not advisable to keep changing the plottable status of a layer as you are drafting, particularly when working in an Xref project environment as plotting and publishing can produce unexpected results. Define your non plottable layers and stick to them.



## Display Order

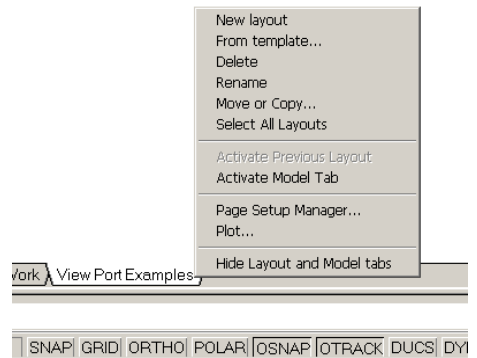
AutoCAD has the capabilities of defining which objects are visible above or below each other via the use of the Draw or Display Order. In order for the display order to remain through Xrefs the Sortents system variable needs to be set at 127.



## Layouts

AutoCAD for many years just had the concept of Model Space and Paper Space, before the introduction of Layouts and then sheets. So what are Layouts and Sheets? In fact they are the same in that they allow multiple Paper Spaces environments to exist in one drawing. Layouts can have preconfigured view ports and specific plot settings via the page setups and represent how the drawing will look on a plotted page.

Layouts can be created, copied, moved, renamed and deleted by right clicking on the Layout tabs. The ability to drag and drop Layouts via Design Center along with any associated Paper space entities such as the title blocks is a useful method for creating drawing sheets. This has the added advantage over inserting blocks as Field text etc can be used.



Although AutoCAD allows many Layouts to be created for each drawing it is considered best practice to use a single layout per drawing and this is particularly imported when sheet sets are used.

## Viewports

View ports can be created using any closed polyline. This allows for non-orthogonal viewports to be created.

Viewport scales can be set within the viewports properties as well as the ability to lock a viewport so that the scale cannot be accidentally changed.

Each Viewport has its own Visual Style that can be applied to it as well as the Shade Plot settings




Custom Viewports

# Plotting

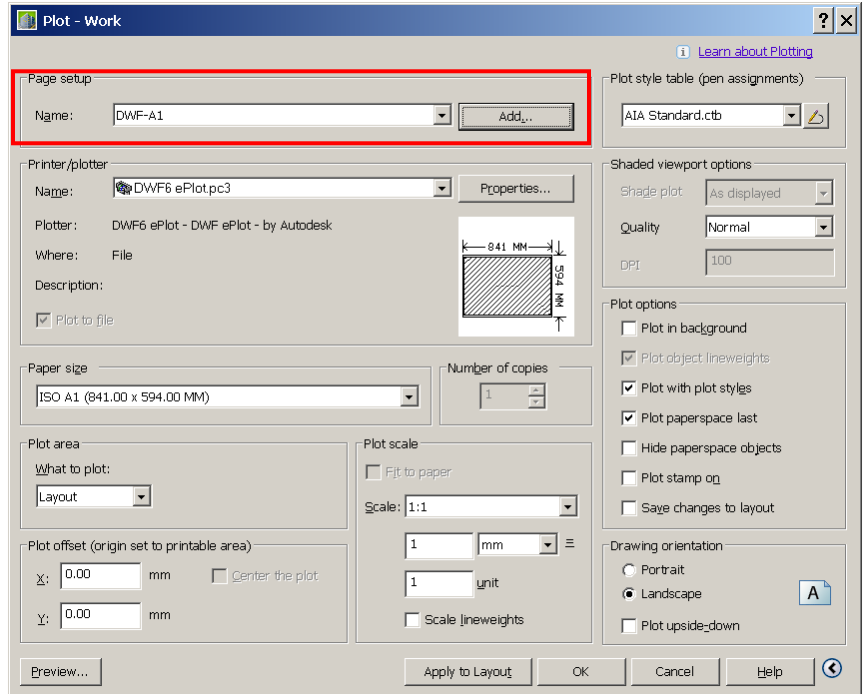
## The Plot Dialog Box

For plotting single drawings just changing the Page Setup which controls the majority of the plot settings.

If you want to use the same setting for another plotter you can choose "previous plot" as an option from the page setup Name.

 This button hides or reveals the Plot Style tables' section within the plot dialog.

Having previewed the plot you can then apply these settings to the Layout by using the Apply to Layout button.



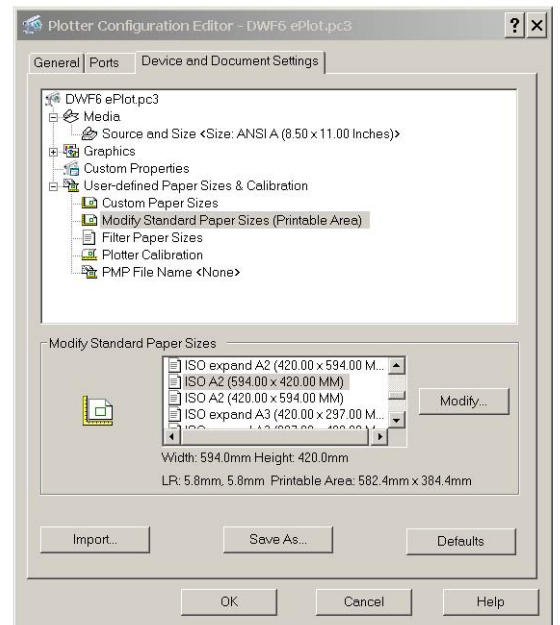
By changing the Quality option from Normal to Presentation note that the DPI setting, although grey will change from 100 to 200m DPI. For specific uses when issuing DWF's it is important to increase the DPI as this will increase the accuracy of the file. Note that the file size will also increase accordingly.

## Plotter Configuration

To configure the settings for the plotter the PC3 file can be accessed via the Plotter Manager or the properties button can be used from the plot dialog box.

This provides a number of options dependent upon the plotter and the type of Drivers. Common properties are the default paper size and graphics properties. It is worth going through all of these in turn and defining any specific requirements.

The User defined Paper Sizes need to be configured for the specific plotter. It is worth filtering the paper sizes to the ones actually required. This includes deleting any margins etc so that the the paper sizes work with your standard title sheets. This information is then saved in the relevant PMP file for the plotter.



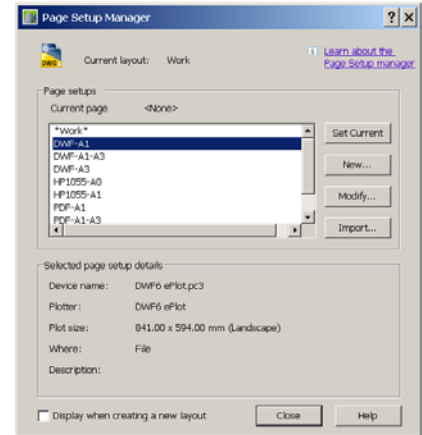
## Page Setups

To ensure consistent plotting and publishing standardised AutoCAD templates and Layouts drawings should be created to enhance your working methods. Included in the Layouts should be predefined page setups. The page setup information that will be used by the plot or publish command and if these are configured correctly and are consistent, then this will greatly enhance your plotting capabilities.

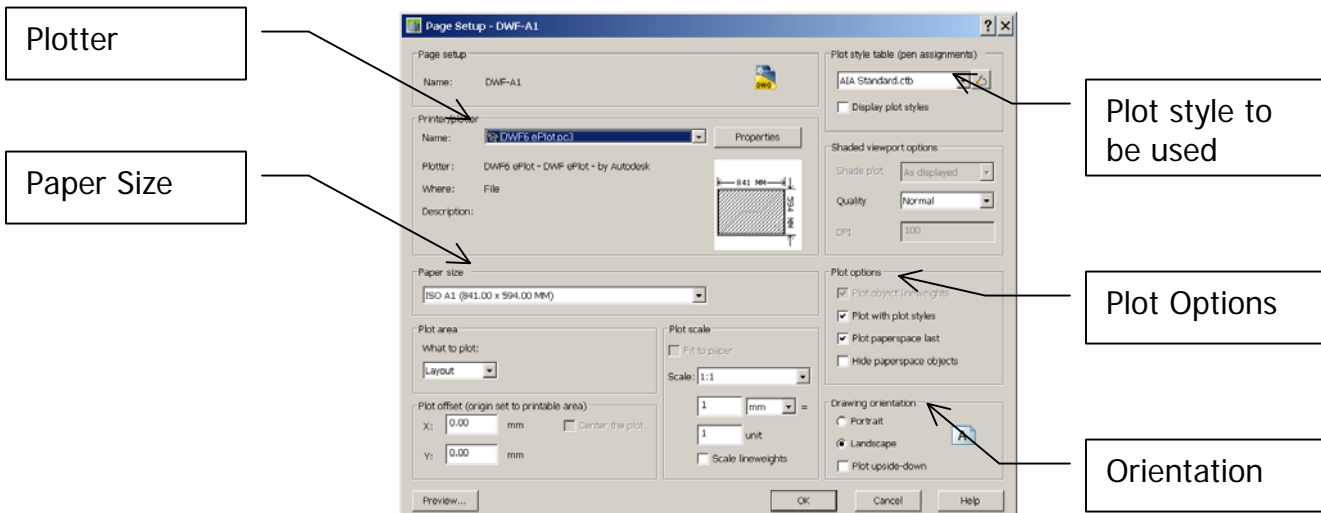
The Page Setup Manager is used to define AutoCAD page setups and can be accessed from the File Manager, by typing 'Pagesetup' at the command line or from right clicking on a Layout Tab.

Ensure that there is a consistent naming convention to the page setups used. It is best practice to create the page setups on a centralised Network drawing and use the import option to add page setups.

It is also possible to import via the command line using the 'psetupin' command, which will then ask you for the location of the drawing storing the page setups. This can be automated via a script, menu or button.



When creating a New or Modifying an existing page setup the Page Setup dialog box is displayed. This gives the options to select the appropriate plotter, defined the paper Size and plot offset. Choose the necessary Ctb or Stb and configure the other plot settings.



## Sheet Set Manager

You create a sheet set by using the 'Create a Sheet Set wizard' that can be accessed via the Sheet Set Manager (SSM at command Line). In the wizard, you can either create a sheet set from scratch based on existing drawings or use an example sheet set as a template.

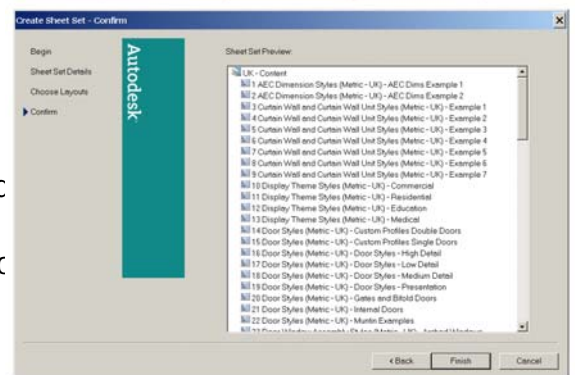
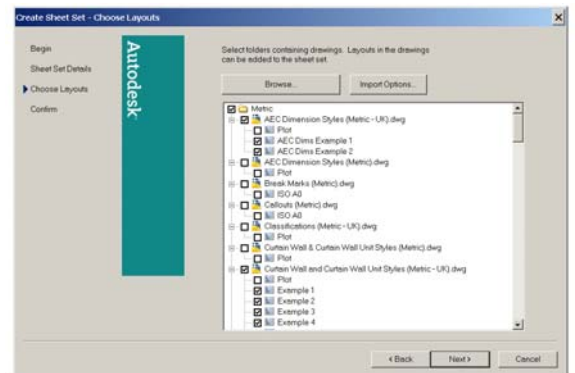
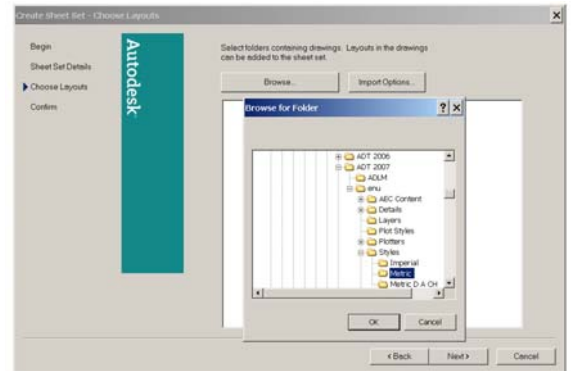
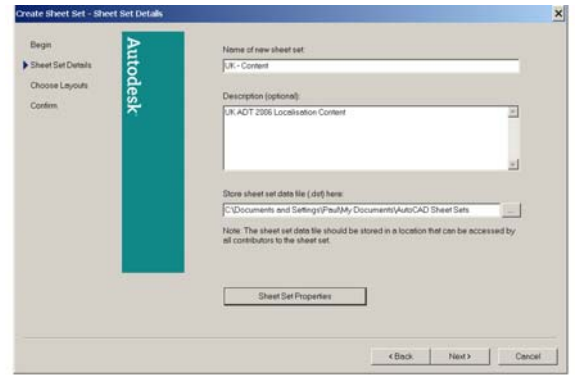
In this example I have imported Layouts from the ADT2007 UK Style drawings by specifying the particular drawing files that are to be imported into the sheet set.

The associations and information that define a sheet set are stored in a sheet set data (DST) file. The sheet set can be split up into specific areas by the use of subsets to define specific work packages etc.

When creating a new sheet set using the Create Sheet Set wizard, a new folder is created as the default sheet set storage location. This new folder, named AutoCAD Sheet Sets, is located in the My Documents folder. The default location for the sheet set file can be changed, and it is recommended that the DST file is stored with the project files.

Note: The DST file should be stored in a network location that is accessible to all sheet set users on the network and mapped using the same logical drive. It is strongly recommended that you store the DST and the sheet drawings in the same folder. If an entire sheet set needs to be moved, or a server or folder name changes, the DST file will still be able to locate the sheets using relative path information

Although it is possible to use several layouts from the same set, it is not recommended. This makes concurrent access to impossible. This practice can also reduce your management organization of your sheet sets



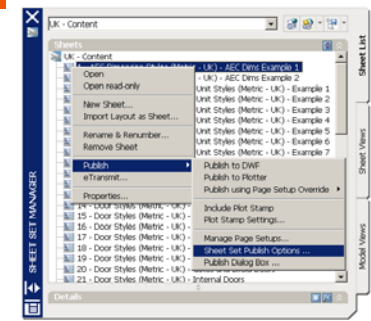
## Publishing from a Sheet Set

Having created a sheet set there are then various methods of issuing the sheet set layouts either through the Publish option to either a DWF or to a plotter and via the Etransmit option.

Sheet Set Publish Options are available for DWF. These give the option of either a single multi page DWF file or individual DWFs files for each sheet. Standard DWF settings such as Layer information and Block information can also be set.

When Publishing to Plotters the plotter information and sheet size is all dictated from the relevant Page setups. If consistent page setups are used across a project then this is quick to implement and the Publish using Page Setup Overrides can be used to switch between plotters.

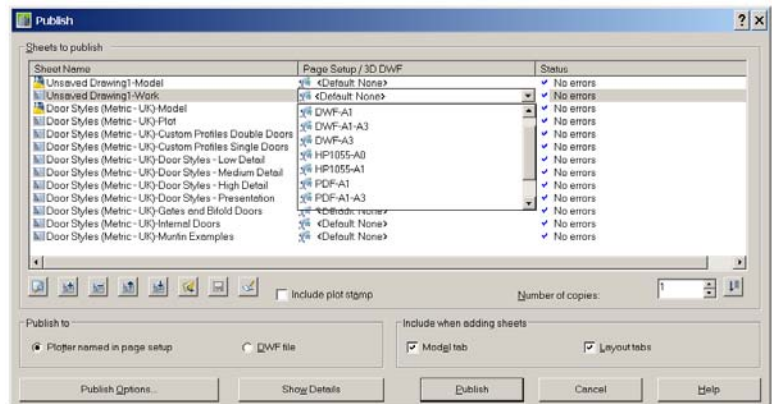
The Etransmit Options also has a transmittal setup that takes you through all the standard Etransmit options. Etransmit allows drawings to be packaged up either as an EXE file, Zip file or a set of folders containing the necessary dwg files along with associated Xrefs and support files as defined within the options dialog.



## Publishing from AutoCAD

The Publish option is another method of batch plotting within AutoCAD. It can be accessed by typing PUBLISH at the command line or by the File \Publish Menu.

As with the sheet set Manager the options to publish are to either by DWF or the plotter.



The setting up of page setups is specifically important, as the drawings will generally be published using their default page setups. If you have to manually override this it becomes a painful exercise and productivity is lost. The saved list of sheets to be published is save in a DSD file.

The controls to the publish dialog are defined by the buttons listed below:



**Preview** – Plot preview of the selected drawing



**Add Sheets** – Adds the selected drawing and any model or Layout tabs.



**Remove Sheets** - Deletes the selected drawing sheets from the list of sheets.



**Move Sheet Up** - Moves the selected drawing sheets up one position in the list.



**Move Sheet Down** - Moves the selected drawing sheets down one position in the list.



**Load Sheet List** - Displays the Load Sheet List dialog box, in which you can select a DSD file or a BP3 (Batch Plot) file to load.



**Save Sheet List** - Displays the Save List As dialog box, in which you can save the current list of drawings as a DSD file. DSD files are used to describe lists of drawing files and selected lists of layouts within those drawing files.



**Plot Stamp Settings** - Displays the Plot Stamp dialog box. This is where you can specify the information, such as drawing name and date, that you want applied to the plot stamp. Plot stamps can be configured using AutoCAD fields which can be included as part of the AutoCAD Layout.

It is generally useful to untick the model space tab within the dialog box before adding drawings to your publish set. This saves removing them after the drawing has been added. Remember to save your DSD files in your project directory so that other Users can also Publish the same set of drawings if required.

## Plot and Publish Details

AutoCAD provides the User with a detailed log of what has been published in the current session. When batch plotting either through sheet set Manager or the Publish tool it is worth checking this log to see what if any errors have been reported.



## Managing your Output.

Through out this session we have covered the various methods of standardising your output configuration and improving the productivity of your plotting and publishing. The specific tasks to aid this are:

- Standard plotter setup, along with configuration settings
- Standard pen settings, either in the form of CTBs or STBs
- Standard Templates
- Standard Page setups

AutoCAD then has a number of tools with the Sheet Set Manager, Publish and Etransmit, which allow batch creation of the necessary hard copies or file formats.

It is also important to make sure that your Senior Managers etc are aware of the issues and costs associated with issuing data in different formats. If you specifically define a single format for issuing all data at the beginning of a project, such as DWF then this will make the issuing process simple throughout the project lifecycle. This alone can resolve many of the problems of issuing data in various formats. This sort of constraints often need to be written into your Clients terms of employment for the project but will make your job easier by doing so and improve your company's profit margin.

The issue of previous versions of AutoCAD drawings should also be included within this. There are possible risks when issuing data back to a previous version, which you do not have and cannot check. By only issuing data in the specific format that you work in can this risk can be reduced. The issuing of CAD data with specific disclaimers is common practice and the use of technology such as Digital signatures can ensure that files have not been tampered with.

To aid the issue of DWG files Autodesk have produced 3 No. Free utilities for the issuing of DWF and DWG data. These are:

- DWF Viewer, which allows the plotting of DWFs
- DWG True View, which allow the opening and plotting of DWG files
- DWF True Convert, which allows DWG files to be save back to previous file formats

It is worth downloading these utilities and putting on a CD to issues to Clients and others you issue data to as opposed to publishing in various formats or pointing them to the Autodesk web site.

I hope that you have enjoyed this session. If you need any additional help then please contact me at: [Paul@Oakley-CAD.co.uk](mailto:Paul@Oakley-CAD.co.uk) ([Http://www.Oakley-cad.co.uk](http://www.Oakley-cad.co.uk))

