

Plotting with Style

Take a close look at your standards

Have you thought about your plotting standard recently? I mean really thought about it? How was it developed? Where did it come from? Does it really serve your needs? Do you have to constantly perform a workaround within your own standard in order to output exactly what you want?

Historical perspective

I'm an old-time hand drafter. I started my career with what seemed like stone knives and bear skins by today's standards. In the seventies I was drafting with pencil lead on vellum. During the eighties I used ink on mylar. Finally, in the early nineties, I started using computer-aided drafting (AutoCAD® 10) for production work.

That old CAD technology forced my firm to map AutoCAD colors to one of six pens in a pen plotter carousel. (We had to make sure we placed the pens in the correct carousel slots based on pen thickness.)

As plotters improved, we were able to define and store desired pen weights in a configuration file (.pcp, .pc2, .ctb). Armed with a color pen weight chart (usually posted on your cubicle wall), plotting became a matter of knowing which of 255 AutoCAD colors equaled which line weight. Ultimately, my firm ended up utilizing only 36 colors in our standard and that worked fine most of the time. I was always fond of calling the pen weight chart "our Secret

Decoder Ring" because without the chart, you really couldn't draft and you sure couldn't plot.

Sound familiar? Still using that system today? Many firms do. For me (and the engineering firm I work for), generating lineweights based on layer colors just wasn't getting the job done.

Color-based problems

Eighty-five percent of the drawings my firm produces are black and grayscale. The remaining percentage is black and grayscale with color enhancements and, additionally, some full-color drawings. Most of these are exhibits used either to obtain project approval from a Planning Commission/City Council or to market ourselves to a prospective client. In either case, the feedback always seems to be the same: "We would like to see friendlier colors." Worse: a "friendly" color for "City A" is never "friendly" enough for "City B." Go figure.

We kept cranking out .pcp, .pc2, and .ctb files and ended up with a boatload. Someone once said, "The nice thing about standards is that there are so many from which to choose." That was our problem with color-based plotting in a nutshell; too many standards. We needed a change and the AutoCAD 2000 plotting enhancements were just the ticket.

When most firms migrated from

AutoCAD r14 to 2000/2000i/2002, they converted their .pc2 files into .ctb files and just kept going "the way we've always done it." I can understand that thinking. Changing standards is difficult and sometimes costly. But if a standard isn't working for you, you owe it to yourself to examine alternatives.

With the advent of the .ctb (color table) file, Autodesk also gave us an alternative: the .stb (style table) file. For my firm, Named-Style based plotting turned out to be the solution. We have successfully employed a single standard .stb file now for the last four years, and it works! Sure, we have to employ agency or client standards on projects when they require them, but for the rest, one file does it all.

Rethinking the standard

For maximum flexibility we need a standard that allows us to assign a plotted lineweight as a separate setting apart from print color (black, grayscale, or color). We also want the ability to easily assign "friendly" colors on the fly and to make them even "friendlier" when we have to.

Rather than define lineweights in a plot style, we use the "Lineweight" column in the Layer Manager. Not only is the lineweight now "divorced" from the plot style, but you'll also find that there are 23 different lineweights (plus 0.00) from

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which to choose. (What? More than you need? More than you want? Probably, but you've gotta love the additional power this gives you.)

To plot something in color we need a style that plots color. Once again we want maximum flexibility. Rather than assign a color to a style, we want a style that uses the layer color as the actual plotted color. That way when the layer color is assigned using the Layer Manager, the plot color is also assigned. Oh, and by the way, you do know that you have more than 16 million different colors to choose from, don't you? When selecting a layer color try the "True Color" tab (See Figure 1). There's got to be a "friendly" color in there somewhere! (Gee, and you thought 23 linetypes were too many.)



Figure 1

Finally, to plot either black or grayscale, we need plot styles that are assigned either black or grayscale. That way when a black (or grayscale) plot style is assigned to a layer, that layer will plot black (or grayscale) regardless of the color assigned to the layer.

In our standard, we now have a choice of more than 16 million colors and each one has 23 available lineweights. We can now change a group of plotted colors from gray to black (or other color) and maintain the existing lineweight of each layer. We can now select different defined grayscale percentages so that grayscale hatches no longer obliterate underlying grayscale lines. We can now take a black and grayscale construction document, add

some new layers, and turn it into an exhibit with added color for use in that important Planning Commission meeting.

Obviously, this standard works for my firm, but may not work for you. The best advice I can give is that you must examine your plotting needs and then see if you can engineer your own solution to solve any shortcomings in your current standard. Before you can do that though, you need to know some of the basics.

A drawing's "state"

The most basic thing to know is that, once created, a .dwg file can be only named-style based (.stb) or color-based (ctb), but not both. Style-based .dwgs cannot access .ctb files and color-based .dwgs cannot access .stb files. The CONVERT PSTYLES command may be used to

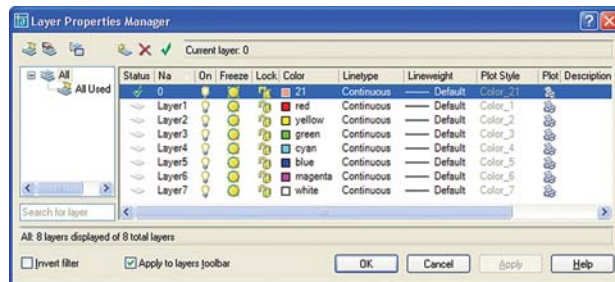


Figure 2

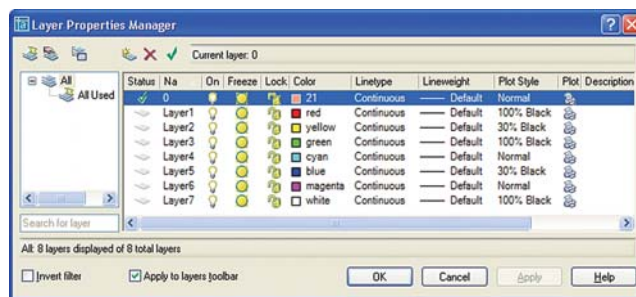


Figure 3

change a .dwg from its current style "state" to the other. But, in my opinion, you should consider a drawing's "state" to be a permanent setting. Drawing conversion should only be done when bringing a drawing in from an outside source or when pushing a drawing out to a client.

To identify the "state" of any drawing, simply open the layer manager and take a look at the "Plot Style" column. If the column is not selectable and is grayed-out, the file is color-based (See Figure 2).

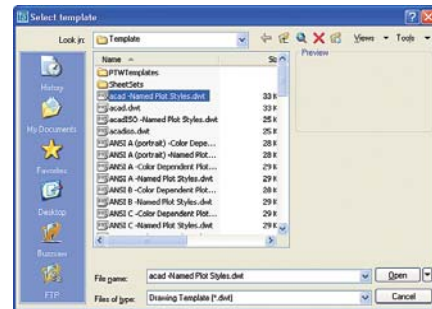


Figure 4

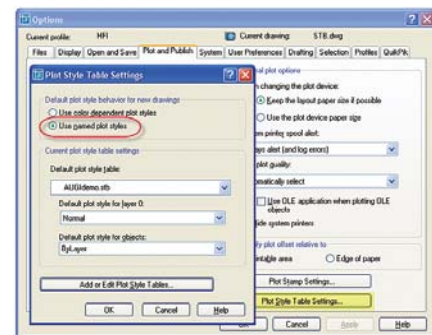


Figure 5

If the column is selectable and is not grayed-out, the file is named-style based (See Figure 3).

One interesting thing to note is that when you examine the "Plot Style" column in a color-based drawing, the grayed-out column contains plot style names! That's right, color-based drawings are style-based; you can't just change the pre-named style like you can in a named-based drawing. In a color-based drawing the plot styles are permanently linked to the

"Color" column. Change a layer's "Color" and the "Plot Style" will automatically change accordingly.

To create a new named-style based drawing from scratch, simply select one of the named plot style templates (See Figure 4) using the NEW command or, if you don't use startup templates, change your AutoCAD OPTIONS settings to use named plot style (See Figure 5). Should you prefer to use QNEW, be sure you are preconfigured to use a named plot style.

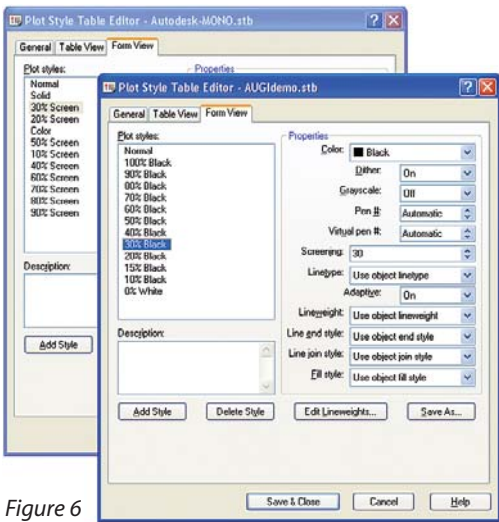


Figure 6

Plot style table settings

The next thing that you need is the .stb. You can use one that ships with AutoCAD or create one very easily. Let's see how to create a file named "AUGIdemo.stb" that will plot per the standard we've been discussing.

Access the "Plot Style Manager" from the "File" pull-down menu. Locate and open the Autodesk furnished file named "monochrome.stb." Note that even though our file "AUGIdemo.stb" is very similar to a file that comes with AutoCAD named "Autodesk-MONO.stb" (See Figure 6), for this exercise it's easier to use the more basic "monochrome.stb" file as a template.

Once "monochrome.stb" is open, switch to the "Table View" tab and save the Plot Style Table as "AUGIdemo.stb" using the "SaveAs" button. Next, click on the "Style 1" column header to highlight the entire column. With the column highlighted, click the "Add Style" button 11 (eleven) times and then switch to the

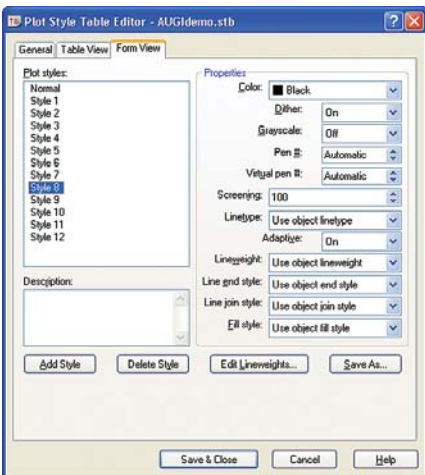


Figure 7

"Form View" tab. You should now see 13 plot styles named "Normal" and "Style 1" through "Style 12" (See Figure 7).

Starting with "Style 1", right-click on each style and rename the styles as "100% Black", "90% Black", "80% Black", "70% Black", "60% Black", "50% Black", "40% Black", "30% Black", "20% Black", "15% Black", "10% Black", and "0% White" respectively (See Figure 6).

Now highlight each named plot style, make sure the "Color" is set to black and then change "Screening" to match the name of the style. In other words, set "100% Black" to 100, "70% Black" to 70, "30% Black" to 30, and so on. Don't worry about

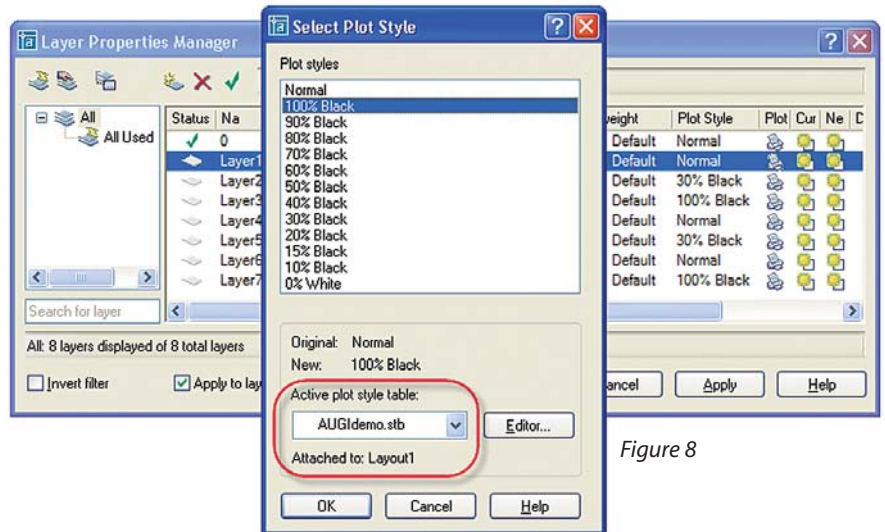


Figure 8

the "Normal" style. It cannot be changed in any way, nor can it be deleted.

The change we just made to each style determines how a layer will plot. When the style "100% Black" is assigned to a layer, that layer will plot black with a screening of 100 regardless of the layer color. The same occurs for each of the other named styles except that the black will be screened, or grayscale, in increasingly lighter shades as the "Screening" value approaches 0. The style "0% White" will result in a white line (if plotted on white paper) when the "Lines Overwrite" setting is used in your .pc3 file. This is useful when you want white text on hatched areas or dark background photos. Just remember that if your .pc3 file is set to "Lines Merge," this will not work.

Finally, for plotting any of the 16 million colors, use the plot style named "Normal." Check the properties of that style and

you'll see that Color is set to "Use object color" meaning that the plotted output will be the color assigned to the layer. If the name of the plot style Normal is not intuitive enough for you, you could always create another style with the same properties named Color. Either way, by assigning that plot style to a layer, the color of the layer is what is plotted.

Assigning the style

To assign a named plot style, open the Layer Manager. Using standard selection techniques, highlight the desired layers and then click in the Plot Style column. The "Select Plot Style" dialog box will open. Make sure the desired .stb file is set current in the "Active Plot Style Table" drop-down list and then select the desired named style from the Plot styles list (See

Figure 8). Note that you have the ability to select different .stb files for different layout tabs, should you desire to do so.

Rethink it

Are you sure "the way we've always done it" is working for you? Or is it time for a change? Take a few minutes to rethink this fundamental AutoCAD process. You just may be able to resolve issues you've been struggling with for years.



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