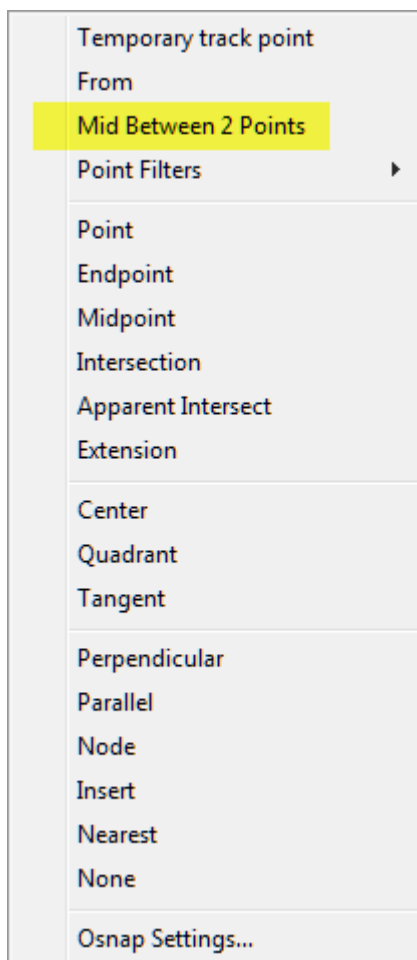# Did you know… About the "Mid Between 2 Points" OSnap?

It hasn't been around forever, but this Object Snap is such a handy little tool you'll wonder how you ever managed to live without it! The best news is that it's available both in AutoCAD and IntelliCAD.

Whenever you're prompted to "Specify a point:", you can enter "M2P" at the Command: line or you can hold your shift key + right-mouse to display the pop up box and select "Mid Between 2 points" option. This allows you to snap to the MidPoint between two other points. The pop up box is shown below.

Next you'll be prompted to specify two new points for which you can use additional OSnap settings. The example below shows a new line that starts at the Midpoint between the ENDpoints of the two existing lines.
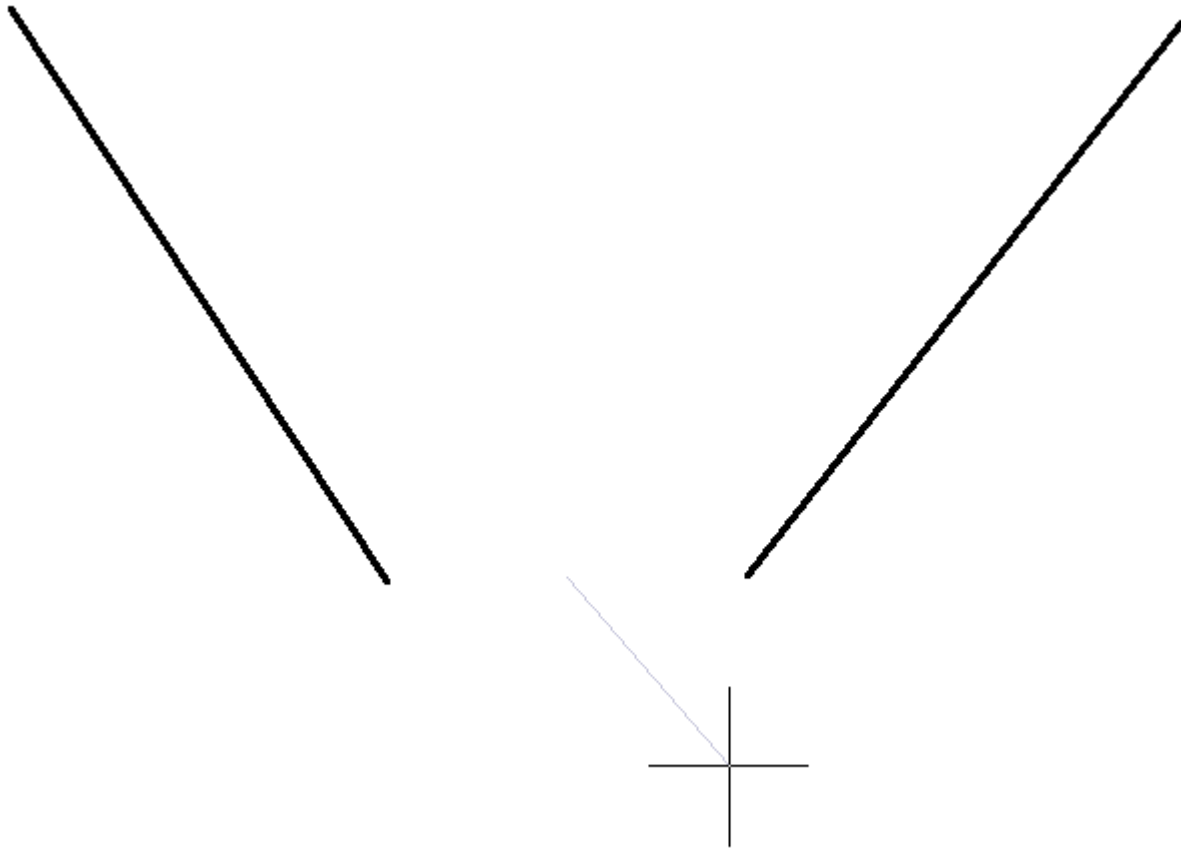
Did you know… About the Upright flag for linetypes?

I didn't until this weekend.

While working on a new Picks and Clicks article for Professional Surveyor magazine I stumbled on something incredibly handy. This setting keeps text that's inserted into a linetype in an Upright position rather than allowing it to be upside-down.

Notice the polyline in the picture below. The top segment (drawn from left to right) has the text upright but the bottom segment (drawn from right to left) shows the text upside-down.
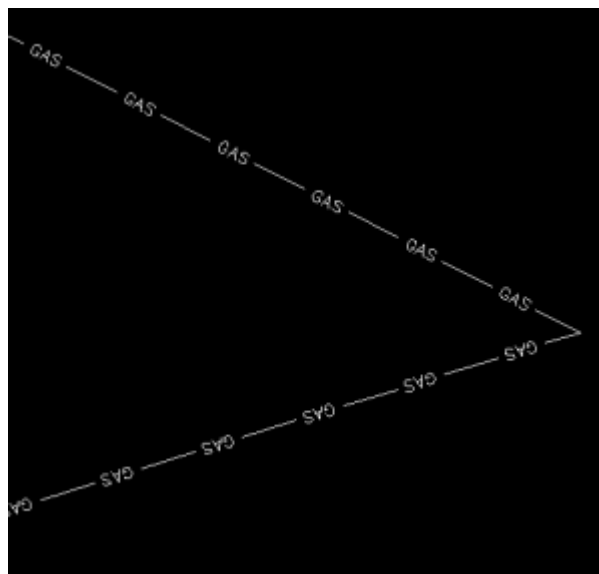
The reason this happens is because of the definition of the "GAS_LINE" linetype in the acad.lin file.

The R=0.0 parameter formats the linetype text so that it aligns with the line segment. Therefore, whether text is upright or upside-down depends on the direction the line is drawn. However, if you simply change the R=0.0 to U=0.0, the polyline displays like this:
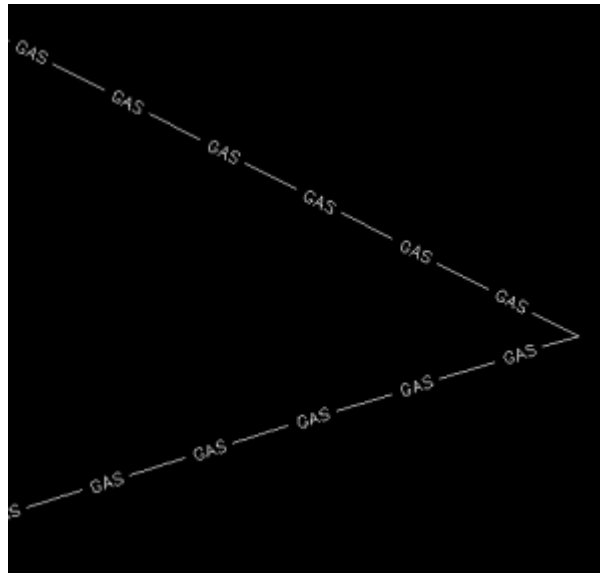
Notice the text is now upright in both segments. Using the U in the linetype definition sets the "Upright" flag. Setting it to 0.0 keeps it Upright relative to the line. I played around with it a bit and, unfortunately, it doesn't seem to help much when rotating with DVIEW or UCS. But, when you're working in world coordinates, this is a great tool.

To my knowledge this is a recently added enhancement to AutoCAD – but I thought it was cool enough to put up here!

My next column in Professional Surveyor will be… Surprise! Standardizing Linetypes! I'll post a link here when it's posted on their site. Follow this link to see if you are eligible for a free subscription to the print magazine: Subscribe to Professional Surveyor magazine.

Picks and Clicks: The Key to Standardizing Annotation in CAD Files

Part 1

The issue of CAD standards has long been one of my pet projects when working with clients. It's the universal problem, as folks from every office confess that CAD standardization is either "non-existent" or, at least, "could be better."

In my experience, the single most-intimidating aspect to developing a CAD standard is deciding how to standardize annotation in order to accommodate the multiple scale factors used in a typical plan set. Other types of sheets surveyors and civil engineers may have to produce are:

- a cover sheet (at 1:1 or no scale),
- one or more project or phase site plan sheet (at 1:50, 1:100, 1:500, 1:1000, etc.),
- plan and profile sheets (at 1:30, 1:50, etc.), and
- detail sheets (at 1:1 or no scale).

It's not an easy issue to resolve, and CAD programs seem to vary from bad to worse in their ability to manage multiple scales within a single CAD file.

Some of the information provided here is very basic, but in my experience even long-time CAD users struggle a bit with the "under-the-hood" details about annotation sizing. So, that being said, where should you start?

Determine the Plotted Size, Plotted Height, Plotted Distance …
of Everything

The most important first step when developing a CAD standard for
annotation is to determine the desired plotted size of
annotation entities. And, when we discuss annotation, we must
remember that this encompasses more than just text; it also
means linetype patterns and dimension styles.

Here are several sample questions to ask when developing a CAD
standard for annotation:

- When plotted, what is the height (in inches) of the text
  displaying:

– the project title in the title block?

– the road name?

– contour labels?

– property line bearings and distances?

  - When plotted, how far off the property line (in inches)
    should the bearing and distance label be placed?
  - When plotted, what is the distance (in inches) between
    labels along a contour?
  - When plotted, what is the length (in inches) of the
    arrowheads at the end of dimension objects?
  - When plotted, what is the distance (in inches) that the
    extension line extends beyond the dimension line?
  - When plotted, what is the length (in inches) of the dashes
    and gaps in the linetype used to show existing contours?
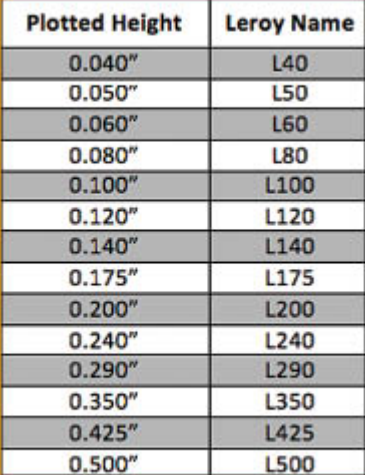
Overwhelmed yet? Don't be. Once you commit to the size or height
of a few entities, the rest come fairly easily just because you
know that you want one entity a little smaller or a little

bigger than another.

The remainder of this column covers the issue of standardizing text sizes in your CAD files. Future columns will cover the other questions relating to linetypes and dimension styles in much more detail.

Standardizing Text Sizes and Placement

Although text height can be set to any desired value, the most commonly used height for plotted text in civil/survey drawings is 0.08". There are several other standard text styles (corresponding to the height of the plotted text), known as "Leroy," that have been adopted from the days of hand and technical lettering. Even though the "Leroy" text style usually has a Simplex font, the naming convention is widely accepted to

Plotted Height	Leroy Name
0.040"	L40
0.050"	L50
0.060"	L60
0.080"	L80
0.100"	L100
0.120"	L120
0.140"	L140
0.175"	L175
0.200"	L200
0.240"	L240
0.290"	L290
0.350"	L350
0.425"	L425
0.500"	L500

Figure 1

describe text of a specific height regardless of its font. For instance, L80 text refers to a Leroy style text that plots 0.08" high; L100 is Leroy with a plot height of 0.10"; and L200 is Leroy with a plot height of 0.20". Other standard heights and style names are shown in **figure 1**.

L80, or text that plots 0.08" high, is generally used for basic text such as bearings and distances, contour labels, and notes. For more prominent text such as road names or parcel numbers an L150, or text plotting 0.15", may be used.

You may be saying, "Yeah, that's great and all, but when I enter text it asks me for the height of the text to be placed in the drawing, not its plotted height." If you use the generic commands for placing text, that is true. However, most

civil/survey programs have specialized commands for labeling that also take into account a horizontal scale that you specify independently for each drawing.

For instance, in Carlson Software or Civil 3D, you can specify program defaults so that bearing and distance labels always have a plotted height of 0.08". Then, as each new drawing is started, you set its horizontal scale. For a drawing with a horizontal scale set to 1"=50', the bearing and distance labels will be placed in the drawing at a height of 4.0' (0.08 x 50 = 4.0). For a drawing with a horizontal scale set to 1"=100', the bearing and distance labels will be placed in the drawing at a height of 8.0' (0.08 x 100 = 8.0). The plotted height never changes.

Consider what a written standard for annotation would look like if we did not base the standard on the plotted size but on the actual drawing size of text…

- In all 50-scale drawings, bearing and distance labels shall be placed in the drawing at 4.0' high.
- In all 100-scale drawings, bearing and distance labels shall be placed in the drawing 8.0' high.
- In all 50-scale drawings, all property corner labels shall be placed in the drawing 3.0' high.
- In all 100-scale drawings, all property corner labels shall be placed in the drawing 6.0' high.
- Unless otherwise specified, all other text in a 50-scale drawing shall be placed in the drawing 4.0' high.
- Unless otherwise specified, all other text in a 100-scale drawing shall be placed in the drawing 8.0' high.

Now, with the understanding that all annotation sizes must be scaled by the horizontal scale, we can simply say:

- All road names shall be L150.
- All property corner labels shall be L60.

▪ Unless otherwise specified, all other text shall be L80.

As you can see, because the text sizes refer to a plotted height, it makes the writing of CAD standards for annotation remarkably easier.

It is also important to note that, when placing text in a drawing, parameters other than text height can be adjusted to
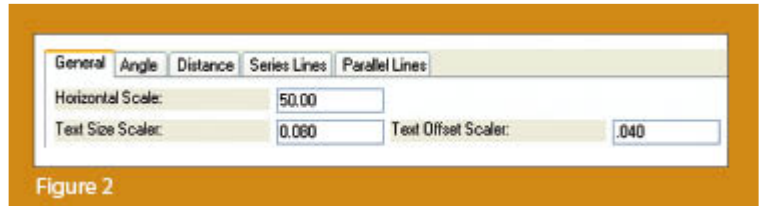
Figure 2

get the desired look. One of these parameters is the distance a label is placed above or below the line it labels. **Figure 2** shows a clip of the Annotate Defaults dialog box in Carlson Survey 2011.

The text height is specified using the "Text Size Scaler" value, and the distance that text is offset from the line it labels is specified by the "Text Offset Scaler." Both of these values are "plotted" distances in inches. You can also see the horizontal scale setting for the drawing. Once plotted, text placed using these settings will be 0.08" high, and it will be positioned 0.04" off the line. A good rule of thumb is to set the offset value at one half the text height.

Another example of an annotation standard that can be associated with a plotted distance is how far apart to place elevation labels along a contour. Rather than specifying that contour labels are "300' apart in a 50-scale drawing" or "600' in a 100-scale drawing," your standard should state that: On the plotted sheet, contour labels shall be shown at 6" intervals along each index contour.

I hope this information has provided a good kick-start toward your CAD standardization goals and helps get you thinking in plot sizes rather than drawing sizes. As noted above, future

columns will focus on other supposed standardization nightmares such as dimension styles and will also touch on some specifics of the different CAD programs. Please don't hesitate to contact me if you have questions. I hope your summer is off to a great start!

This article originally appeared in the June 2011 issue of Professional Surveyor magazine.

Picks and Clicks: Conquer Problem Drawings

This article originally appeared in the February 2011 issue of Professional Surveyor magazine.

While working with IntelliCAD, AutoCAD, or any other AutoCAD-

based programs, we've all encountered the proverbial drawing from "you-know-where" that seems to drive us crazy from start to finish. Here I offer several tips to help you identify problems and conquer your problem drawings. I've listed these tips in the order I would apply them.
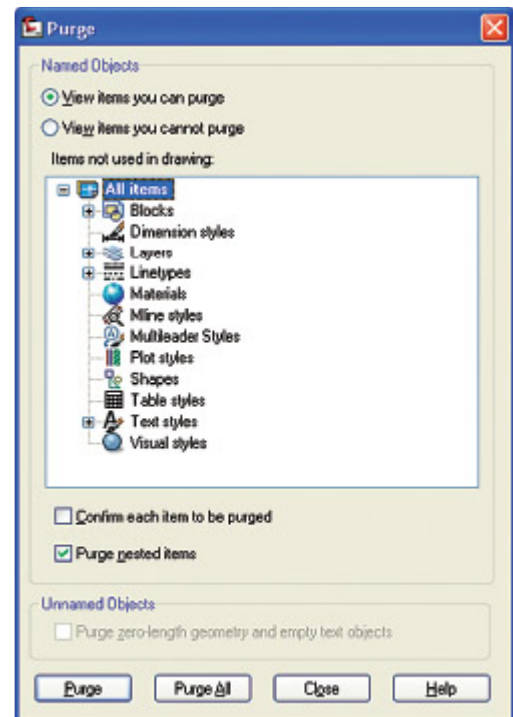
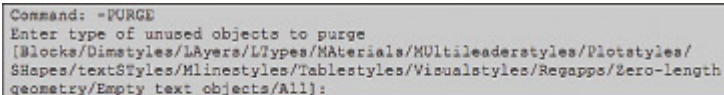FIGURE 1: Purge dialog box

1 Purge your drawing.

The PURGE command removes any unused layers, linetypes, text styles, shapes (for linetypes and text), and many other items in the drawing.

When you run the purge command once, it will purge those items that are not currently in use and that have no other dependencies. For example, if a particular linetype definition depends on a particular shape, the purge command will delete the linetype definition only on the first pass.

Purging again will now delete the shape because the dependent linetype no longer resides in the drawing. Enabling the option to "Purge nested items" before purging will automatically execute the command repeatedly until all unused and dependent items are gone.

2 Purge remnants of registered applications that have accessed your drawing.

Typing "–PURGE" will execute the command line version of the purge command. This version includes a few options not available from the purge dialog box.

```
Command: -PURGE
Enter type of unused objects to purge
[Blocks/Dimstyles/LAyers/LTypes/MAterials/MUltileaderstyles/Plotstyles/
SHapes/textSTyles/Mlinestyles/Tablestyles/Visualstyles/Regapps/Zero-length
geometry/Empty text objects/All]:
```
FIGURE 2

One of the extra options is "Regapps," which is available only from the command line version of the command. You access it by typing "R" when prompted. This option removes "leftover" data from other programs (registered applications) that have been used to work on the drawing file.

3 Audit the drawing.

The AUDIT command looks for discrepancies between the objects displayed on the screen and the objects' definitions in the drawing file database. The command then gives you the option of correcting the errors it has found. This command can be executed only while the drawing is open and active.

4 Recover the drawing and all reference files.

The RECOVER command is a more robust version of the audit command and can be used to open drawings that are so corrupt they cannot be opened otherwise.

Starting the recover command prompts you to browse to and select the problem drawing. If the problem drawing is already open and

active, recover will prompt you to save changes before reopening the drawing and starting the recovery process.

For drawings that have attached XREFs (external references), use the RECOVERALL command to open and repair the selected drawing plus all dependent XREFs. Note that errors corrected by the audit are not saved back to the XREFs.

FIGURE 3: WBLOCK command dialog box
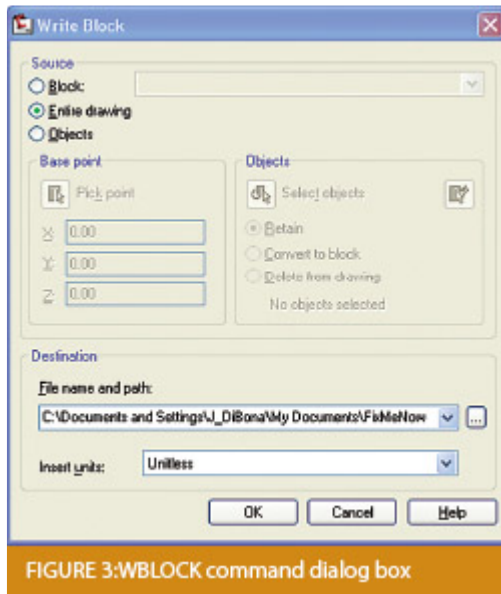
5 Block out the drawing contents to a new drawing.

If you suspect a drawing has become corrupt, you can WBLOCK the entire drawing out to another file. After starting the wblock command, set the "Source" option as "Entire Drawing" and provide the location and name for the newly created file.

Note that this command saves only Model Space entities to the new drawing. If needed, use AutoCAD Design Center to transfer layout tabs.
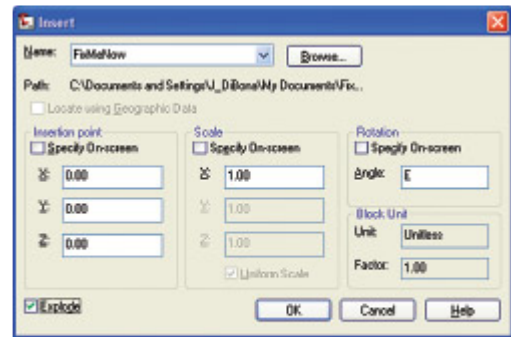
FIGURE 4: Insert Block command dialog box

6 Insert the problem drawing as a block into a new drawing.

Using the same principle as above, you can use the INSERT command to bring the Model Space contents of a problem drawing into another drawing. Doing this will reduce or eliminate corruption in the problem drawing.

Make sure to use 0,0,0 as the insertion point and set the rotation angle and scale appropriately.

As with wblock, this command saves only Model Space entities to the new drawing. If needed, use AutoCAD Design Center to transfer Layout tabs.

7 Export drawings from vertical programs to AutoCAD.

Autodesk products such as Land Desktop or Civil 3D create program-specific, proprietary entities such as AEC Contours and AEC Point Objects. These proprietary objects can become corrupt or otherwise create problems when being accessed from standard AutoCAD or another program that doesn't recognize the proprietary entities.

You can enter the -EXPORTTOAUTOCAD command at the command line

to create a new drawing file that strips out the proprietary entities and leaves only standard AutoCAD entities. For instance, a Land Desktop or Civil 3D drawing containing AEC Contour entities will result in elevated polylines with text when exported to Autocad. And a Land Desktop or Civil 3D drawing containing AEC Point entities will result in a block with attributes when exported to AutoCAD.

Note that any AEC Objects will obviously lose their intelligence, but the new drawing can be opened in any version of Autocad.

FIGURE 5: Modify Conversion Setup dialog box in Autodesk's DWG TrueView
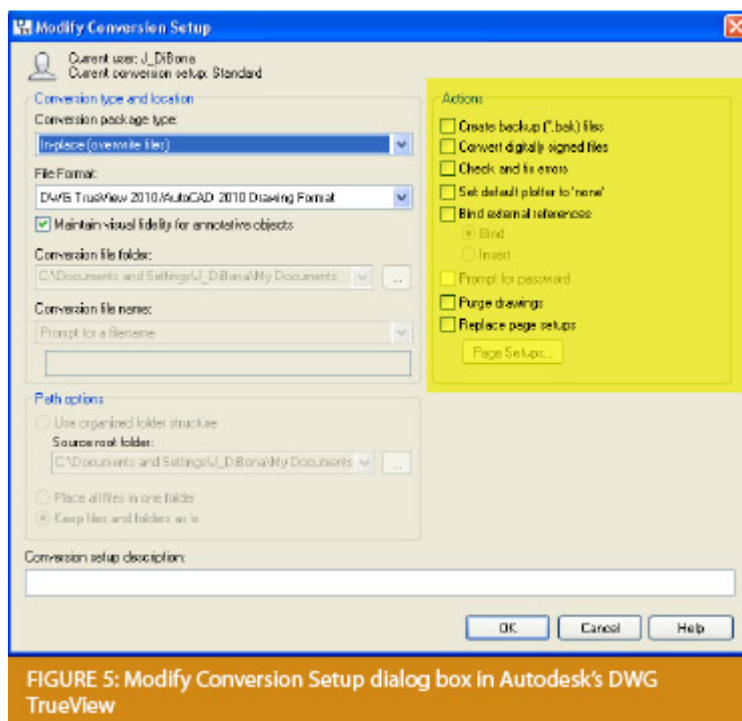
8 Use DWG TrueView Convert to fix errors and bind XREFs.

DWG TrueView is a free program that you can download from Autodesk's website. It is most valuable for its ability to convert drawings to earlier versions individually or in bulk. In the Conversion Setup dialog box, you can specify one or more options to clean drawings during the conversion process.
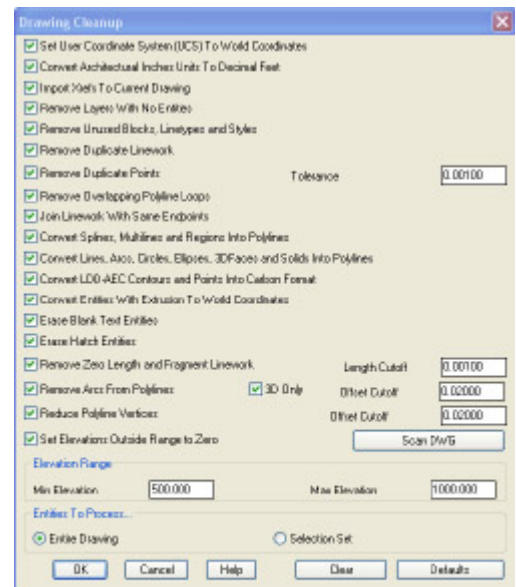
FIGURE 7: Carlson Software Drawing Cleanup dialog box

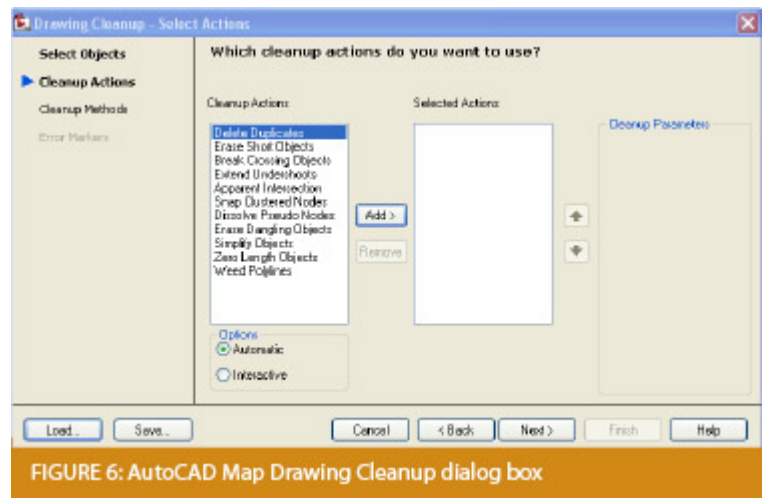# 9 Use the Drawing Cleanup command in AutoCAD Map or Carlson Software.

FIGURE 6: AutoCAD Map Drawing Cleanup dialog box

Both AutoCAD Map and Carlson Software provide Drawing Cleanup commands that provide a variety of cleanup tools. In either version, you have the option of performing one or more cleanup tasks on the entire drawing or on only selected entities in the drawing.

Note: Use these commands with caution and apply cleanup options

incrementally to avoid making unwanted changes. Also, I recommend making a backup copy of the active drawing before performing this command.

If you use AutoCAD Map, Land Desktop, or Civil 3D, you can access the Drawing Cleanup command from Map → Tools. In Carlson Software, access it from the File menu.

10

I've come up with 9 tips that will help you clean up and, maybe, access drawings that have become corrupt. To round out the list and make it an even 10, I'd like to hear from readers to find out what your favorite drawing recovery and cleanup tools are. Please email me at ContactUs@thatcadgirl.com and I'll report in a future column.

This article originally appeared in the February 2011 issue of Professional Surveyor magazine.

Picks and Clicks: Dynamic Blocks

This article originally appeared in the December 2010 issue of Professional Surveyor magazine.

Welcome to the first installment of this new column highlighting favorite AutoDesk, IntelliCAD, and Carlson Software features. My goal is to help you reduce your number of "picks and clicks" while using these pieces of software so you can be more efficient, saving time and money.

Because many of us are hanging onto our current software versions for as long as possible these days, I will try to avoid reviewing features that were released in "last week's" version and will instead write about commands and features that have been around for at least a few years.

First: A little about my background and experience. My first CAD class was with AutoCAD 9 and DCA software as part of my Surveying Technology coursework in college. After graduating, I worked for various consulting, engineering, and surveying companies where I used mostly the Autodesk family of products: AutoCAD, AutoCAD Map, Land Desktop, and Civil Design with brief detours into the MicroStation, GeoPak and Eagle Point worlds.

It was during this time that I started teaching basic CAD and civil/survey CAD classes at local community colleges. I then joined a local Autodesk and Carlson Software reseller to help start and build their training division. In 2004 I stepped out to begin working for myself as That CAD Girl. I offer Carlson Software sales; training and support for Autodesk, Carlson and IntelliCAD; and associated consulting services while specializing in CAD standards development and surface modeling training. My website is at www.thatcadgirl.com. And my surveying column is now here!
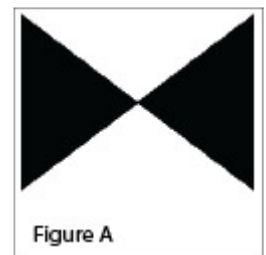
Figure A

Water Valve

(**Figure A**)

One of my favorite, fairly new AutoCAD features is Dynamic Blocks, which was first introduced in AutoCAD 2006. A Dynamic Block is simply a standard block that has been enhanced with additional functionality. You may have seen examples of complex Dynamic Blocks that allow you to change the size (by stretching) or the orientation (by mirroring) only pieces of a block without having to EXPLODE it. But, you can also save many picks and clicks by giving your existing blocks a facelift with some simple Dynamic functionality. Let's start with a standard symbol or block that most everyone will already have saved in a block library somewhere: a Water Valve.
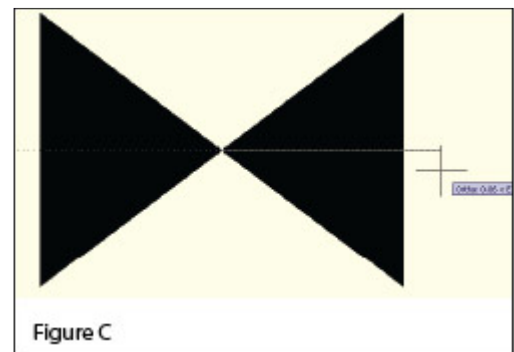

Figure B
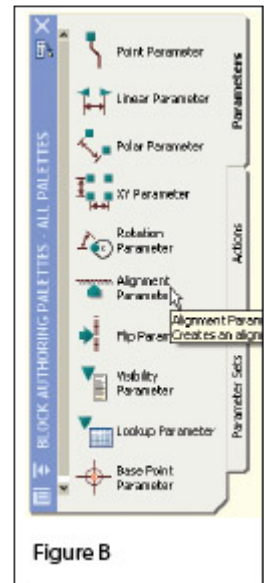
To use the standard version of this block in a drawing, we usually have to:

1. Use the INSERT command to bring the block into the drawing.
2. Use a NEArest OSNAP to position the block on a line representing a waterline.
3. Use the ROTATE command with the Reference option to align the block with the line.
4. Whew!

Two minutes (or less) in the Block Editor will eliminate steps 2-4 (**at right.**)

1. Insert the standard Water Valve block into your current drawing.
2. Left-click to select the block.
3. Right-click and open the Block Editor from the shortcut menu.
4. On the "Parameters" tab of the Block Authoring Palette, select the tool to create an Alignment Parameter. [**Figure B**]
5. The Command: line prompts you to, "Specify base point of

Figure C

   alignment or [Name]:". Use your INTersection OSNAP to specify the insertion point for the block.
6. Next, you are prompted to "Specify alignment direction or alignment type [Type] <Type>:". [**Figure C**] Turn Ortho On and pick a point directly to the right of the insertion
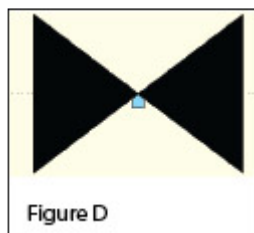
Figure D

   point.□
7. When finished, the block with its new Alignment icon will look like this in the Block Editor: [**Figure D**]
8. □Pick the Close Block Editor button at the top of the screen and then pick "Yes" when prompted to save the block definition.
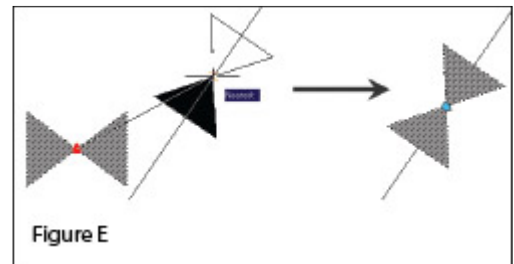
Figure E

Using the Dynamic Block

Once you are back in the main drawing screen, the original instance of the block will have been updated.

1. Left-click the block to see the new Alignment icon.
2. Left-click on the blue Alignment icon. This allows you to "pick up" the block and move it. [**Figure E**]
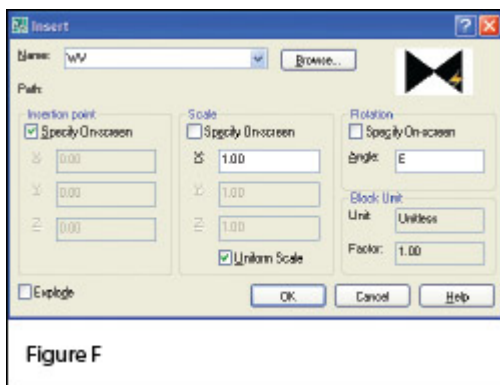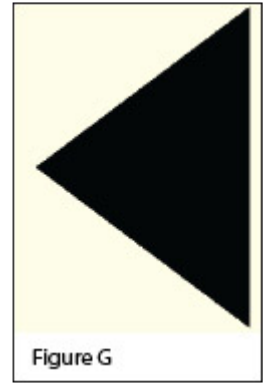

Figure F

3. Drag the block on top of a line in your drawing that represents a waterline. You will notice that, once your crosshairs are positioned over the line, the block automatically aligns itself to the line, and, in addition, the NEArest OSNAP is enabled allowing you to position and snap the block directly onto the line.
4. Use the Insert command to draw additional copies of the block into the drawing. Notice that the thumbnail image of blocks with Dynamic parameters displays a lightning bolt icon so as to differentiate Dynamic Blocks from standard blocks. [**Figure F**]

Waterline Reducer

Figure G

[**Figure G**]

Another often-used water-utility symbol that can benefit from the addition of Dynamic properties is the waterline Reducer. This symbol is used to indicate a change in the size of a waterline. In addition to an Alignment Parameter, this symbol needs a Flip Parameter that allows us to easily mirror it to change its direction. Unlike an Alignment Parameter, adding a Flip Parameter to a block also requires that you add a second Dynamic Block component called an Action. Giving a block "flip-ability" requires a few more steps, but is still rather easy.

1. Repeat steps 1-7 as described for the Water Valve to insert the "Reducer" block into the drawing and add an
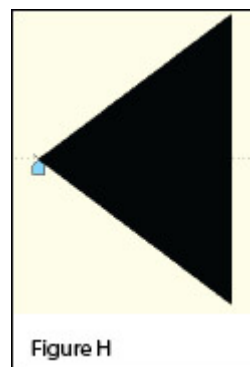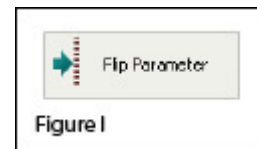

Figure H

Alignment Parameter to it. The Reducer with its Alignment icon is shown at left: [**Figure H**]
2. Turn Ortho On.
3. Pick the Flip Parameter icon on the Block Authoring Palette. [**Figure I**]
4. The Command: line prompts you to "Specify base point of

reflection line or [Name/Label/Description/Palette]:". Use your ENDPoint OSNAP to specify the insertion point for the block (use the same point as for the Alignment Parameter).

5. The Command: line next prompts you to "Specify endpoint of reflection line:". With Ortho On, pick a point directly above the "Base Point" specified in the previous step. These two points define the "reflection line" for mirroring.

6. You are then prompted to "Specify label location:". Pick a

Figure I

point somewhere just above the   Reducer symbol. The label reads, "Flip state".

7. Use the MOVE command, with Ortho On, to slide the Flip icon above the block.

8. The Reducer [**Figure J**] with its Alignment [**Figure K**] and Flip icons [**Figure L**] are shown at right. A Warning icon [**Figure M**] is also displayed indicating a missing
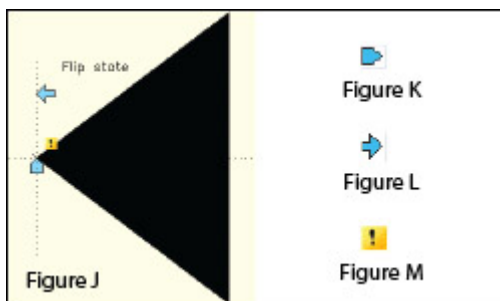
Action component.

9. On the "Actions" tab of the Block Authoring Palette, select the tool to create a Flip Action. [**Figure N**]

10. The Command: line prompts you to "Select Parameter:". Select any part of the Flip Parameter including the label, the Flip icon, or the Warning icon.

11. Next, you are prompted to "Specify selection set for action. Select Objects:". Select the Flip icon and all entities that make up the block/symbol.

12. You are then prompted to "Specify action location:". Pick a point somewhere near the "Flip state" label. The label
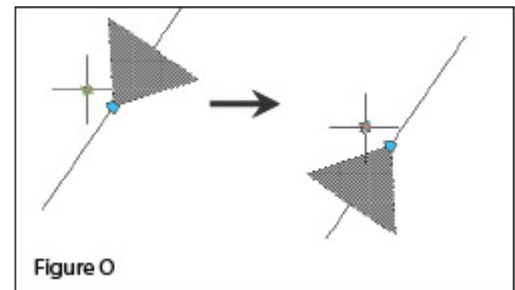
Figure N
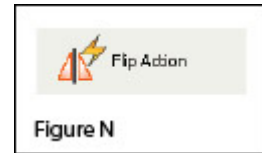
has a lightning bolt icon and reads, "Flip".

13. Pick the Close Block Editor button at the top of the screen and then pick "Yes" when prompted to save the block definition.

Using the Dynamic Block

As before, once you are back in the main drawing screen, the original instance of the block will have been updated.

Figure O

1. Left-click the block to seea the new Alignment and Flip icons.
2. Left-click on the blue Alignment icon to move it onto a line representing a waterline.
3. Left-click on the blue Flip icon to mirror the block along the line.
4. Use the Insert command to draw additional copies of the block into the drawing. [**Figure O**]

Note that the steps change the block definition in the current drawing only. The WBLOCK command must be used to save the block out as an external Drawing (.dwg) file.

This article originally appeared in the December 2010 issue of Professional Surveyor magazine.

What is Carlson up to?

This is a good article about Bruce Carlson and where Carlson Software is planning to go in the future…

Independence All the Way

Originally posted on **Carlson Connection** by Jennifer Dibona

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The Kansas City Carlson User Group

I'm reflecting on my impressions of the inaugural meeting of the Kansas City Carlson User Group meeting held at the corporate office of Griner & Schmitz on August 20, 2009. About a dozen individuals showed up to form new business relationships with one another and draw on the strengths from their common bond.

The meeting started out with the gracious hospitality of Griner & Schmitz who hosted the event at their corporate headquarters in Kansas City. Complimentary food and beverages were aplenty and the guests quickly found themselves forming or renewing friendships with others in attendance.

After a bit of socializing, the guests were treated to a sneak peek of Carlson SurvCE 2.5 from Carlson Software South Central Regional Sales Director Aaron Newman. Aaron demonstrated many of the new and powerful features of SurvCE and showed the attendees how to leverage the power of the Carlson Field-to-Finish routines. Throughout the presentation, one of the key benefits of a User Group is that questions posed by one individual

benefits the others and attendees are generally willing to share their observations and experiences with others. After Aaron's presentation, I was given the opportunity to demonstrate some of the new features that will be released with Carlson 2010 with particular focus on surveying and the communication of information between the field and the office.

It was amazing at how quickly the two-hour meeting flew by but it is my opinion the Kansas City Carlson User Group is off to a great start. If you're in the Kansas City area in mid-October for the expected follow-up meeting, consider dropping in for some informational aspects of the products and services offered by Carlson Software. Otherwise, express your interest in forming a Carlson User Group in your region!

Originally posted on **Carlson Connection** by Ladd Nelson

BIM is not GIS

As someone quite entrenched in both disciplines (Civil and Architectural), I'll add my 2 cents worth on the BIM vs. GIS subject.

In my opinion, BIM and GIS are both "methodologies" rather than "products". The acronyms each have their own meaning and refer to designing, building, and managing information in a full life-cycle.

Each discipline has its own standards; from CAD standards to design standards (think of AIA vs. AASHTO), but both BIM and GIS rely on correct As-Built data to provide accurate information about their models.

BIM

The National BIM standard states the definition of BIM as:

"*BIM is best thought of as a digital representation of physical and functional characteristics of a facility…and a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition.*"

Autodesk has taken the BIM acronym that has provided a great deal of success with their Architectural Modelling packages and applied it to their Civil products as well. Their logic appears to be that its a "3D" product, therefore it is a "BIM" product. I believe that it is irresponsible to change terminology to simply advance product sales.

On the Autodesk Web Site, Autodesk lists a number of products as being "BIM" products:

- Revit
- Navisworks
- Design Review
- AutoCAD LT
- + several more

With the acronym meaning *Building Information Modelling* (with *building* being a *verb* **OR** a *noun*), its interesting to see products such as **AutoCAD LT** and **Design Review** being shown on the list.

Revit

Revit is a Design Tool that allows the storage of certain pieces of information as well as the ability to add custom fields (heating capacity, cooling capacity, etc.) to the actual objects.

Navisworks

Navisworks integrates information from multiple data sources to provide a cohesive collection of information (graphics and data) to analyze things such as clash detection (HVAC duct work clashing with structural components, etc.).

AutoCAD LT
AutoCAD LT is Autodesk's low-end design package. Apparently, any DWG file creation tool is now a BIM product as well.

Design Review
Design Review is a light-weight DWF viewer and markup tool. While it has been used as a backbone of products such as FMDesktop, its neither a Design tool, nor a Modelling tool.

FMDesktop
Absent from the list is FMDesktop. FMDesktop was one of Autodesk's tools for managing the Building Information and Autodesk just dropped the product (*Note*: There are dozens of Facilities Managent Products available that provide similar capabilities such as FM:Systems, Archibus, Tririga, Manhattan, Cadapult, Famis, and more).

In the 2006 – 2007 time frame (when Autodesk acquired FMDesktop), Autodesk themselves showed customers Power Point slides regarding BIM. These slides showed where the "Design", "Build", and then "Operate and Manage" processes were performed. FMDesktop was Autodesk's solution to tell the story of the building lifecycle and where the *information* was to be *managed*. These were broken down into 2 sections: The "Data Collection" piece and the FMDesktop piece.

Data Collection incorporated the Design (several disciplines such as Architects, MEP Systems Engineers, and Structural Engineers) as well as the majority of the Build process. The FMDesktop piece overlapped the Build process and then took over for the "Operate and Manage" process.

In my opinion, building that model of information **AND** managing that information is the true test of a "BIM" solution. There is no 1 product that is a "BIM" product. Its a series of technologies that are incorporated to provide the "information".

Ultimately, a database component is required to work with the graphical representation of data (which certainly could be referred to as the "Building Model").

GIS
GIS is BIM's counterpart whereby Geographic (position on the planet) information is being stored and managed.

Most end users might think of GIS solutions as Google Maps or Google Earth where they can enter an address and out pops a graphic representation of that location or directions on how to get there. The graphic is just the tip of the iceberg. Without the data, the graphic would simply be a pretty picture.

Just as with BIM data, GIS data utilizes design tools to build the graphics and As-Built data and then tools to expand upon the As-Built information.

While there are a number of individual products on the market to assist in the creation, manipulation and distribution of GIS data, a complete GIS system involves more than 1 product or techonology.

A couple of the common Design Products are: Autodesk Civil 3D and Carlson Civil Suite

AutoCAD Civil 3D
Civil 3D is an object-oriented design tool for Civil Engineering applications. Because the tool is object oriented, the end product is not easily distributable. The data can be transferred to other links in the GIS solution chain by using technologies

such as LandXML, but the graphical interaction is lost in this process (i.e. the objects are lost).

Carlson Civil Suite
Carlson's Civil products work with DWG files in an AutoCAD or IntelliCAD DWG format. Because the data is stored as compatible DWG information with external data files, the data is easily transferred to other products in the GIS solution chain.

Managing the data developed in the design process is the next component of the GIS life-cycle. A number of products provide those solutions: ESRI ArcGIS, Vueworks, and Custom Mapguide Solutions.

ESRI ArcGIS
ESRI's shp (shape) and adn (coverage) files are quite possibly the most prevalent GIS specific data files available and are often integrated in GIS solutions. ArcGIS allows GIS solutions to be deployed similar to FM solutions in the BIM world.

Vueworks
Vueworks is an organization that builds GIS and Work Management solutions using the ESRI base applications.

MapGuide
MapGuide is Autodesk's development environment to build GIS applications. It is often used in concert with ESRI, Microstation and Autodesk data files.

GIS Standard
While there is not yet a concensus on a singular GIS standard, there are independent Spatial Data Standards employed by each digester of GIS data. You can view some of those here:

- Denver Colorodo Spatial Data Standard
- Oregon Spatial Data Standard

- Federal Geographic Data Committee

Both GIS and BIM perform very specific functions in accordance with their own disciplines. While the terminology is often mis-used, they refer to unique information systems; BIM in the structural facility world and GIS in the geographic world.

Originally posted on **Carlson Connection** by Jon Luby

Carlson Webinars — BIM, GIS and CAD Standards

Carlson Software recently asked Felicia and me to present webinars on topics we have particular interest in or specialize in.

Felicia's webinar on BIM, GIS and Carlson Software can be viewed here: BIM, GIS and Carlson Software Webinar

My webinar on CAD Standards can be viewed here: CAD Standards for Carlson Software with AutoCAD or IntelliCAD

Originally posted on **Carlson Connection** by Jennifer Dibona

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Carlson 2010 Sneak Peek

The highly anticipated Carlson 2010 release offers clients hundreds of new or improved features from that found in Carlson 2009 and continues Carlson Software's track-record of delivering

responsive solutions to client-requested technology needs.