[CLASS ID]

AutoCAD Tips, Tricks, and Dazzling Drafting Techniques

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Learning Objectives

- Learn how to maximize your use of AutoCAD by stretching the limits of common commands.
- Discover how recently added features can supercharge your use of AutoCAD.
- Advance your use of AutoCAD with simple techniques proven to improve productivity.
- Learn how to razzle dazzle your colleagues with secret tips that AutoCAD veterans and gurus know.

Description

Sit down, buckle up, and keep your hands on your keyboard as Autodesk Expert Elite member Donnie 'The CAD Geek' Gladfelter takes you through a dazzling collection of drafting techniques guaranteed to improve your productivity—one click at a time. Join Donnie as he shares techniques acquired from authoring six books on AutoCAD, blogging for more than a decade, and serving as the design technology manager of a roughly 700-person civil engineering firm. From simple to advanced, you're sure to discover new ways to remove tedium and boost your ability to meet project deadlines. Hourly employees need not attend as this session will only include techniques proven to improve productivity.

Speaker(s)

Donnie Gladfelter is a highly respected thought leader in the CAD community and Autodesk Expert Elite member with more than two decades of experience in the AEC industry. He is author of six Autodesk Official Press books, The CAD Geek Blog (https://thecadgeek.com), and dozens of Autodesk University classes since 2007. As an experienced speaker, Autodesk Certified Instructor for ten-years, and an award-winning speaker at Autodesk University, Donnie has presented to audiences of 60,000+ people and provided training to thousands on Autodesk design technology. Today, Donnie is the design technology manager at Timmons Group, an ENR Top 500 civil engineering firm headquartered in Richmond, VA where he is responsible for organizational development including learning, knowledge management, and design workflows across the firm.

Interactive Handout Available at https://thecadgeek.com/au/au2020

Annotation

Edit Attributes without the Attributes Editor using Ctrl

Need to change the value of a block attribute, but don't want to open up the Block Attribute (BATTMAN) command?

You don't have to. Just press-and-hold the Ctrl key as shown in Figure 1 while you double-click the attribute you wish to edit.

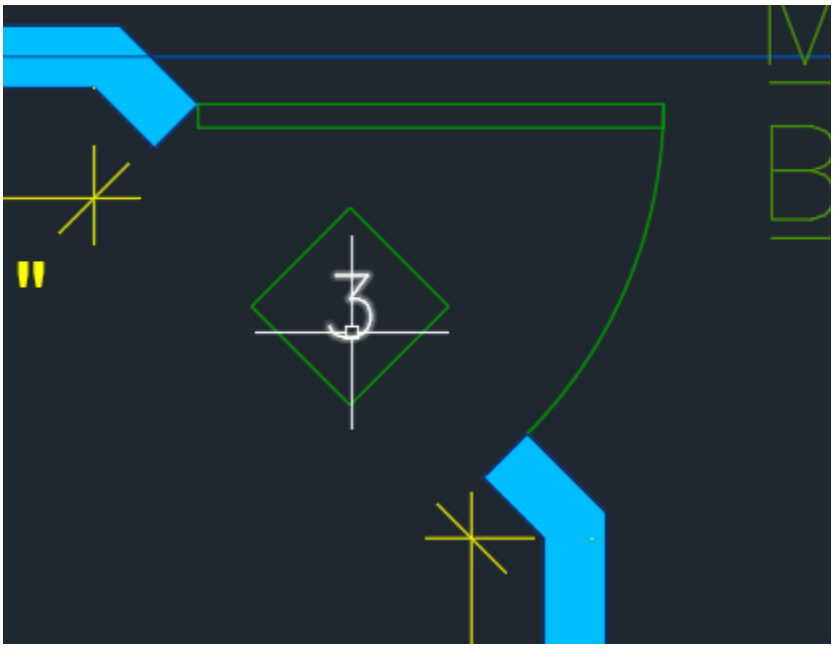


Figure 1: Only the Block Attribute highlights when pressing the Ctrl key.

Maintain Attribute Values with Exploding with BURST

Need to explode a block with attributes and want to maintain the attribute values of the block?

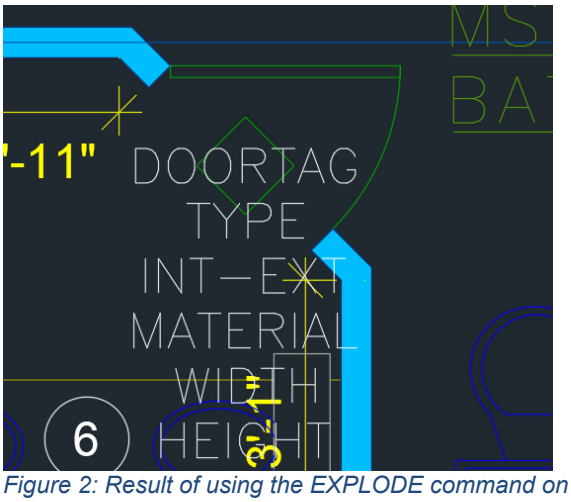


Figure 2: Result of using the EXPLODE command on a Block with Attributes

While you can use the EXPLODE command on blocks with attributes, doing so displays the Attribute Names shown in Figure 2, not their values. The BURST, or Explode Attributes command shown in Figure 3 fixes all of that, and lets you explode blocks with attributes as you might expect.

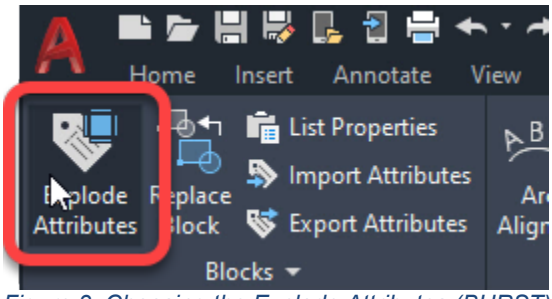


Figure 3: Choosing the Explode Attributes (BURST) command from the Express Ribbon Tab

After starting the Explode Attributes (BURST) command, just select the block you would like to "explode" as shown in Figure 4.

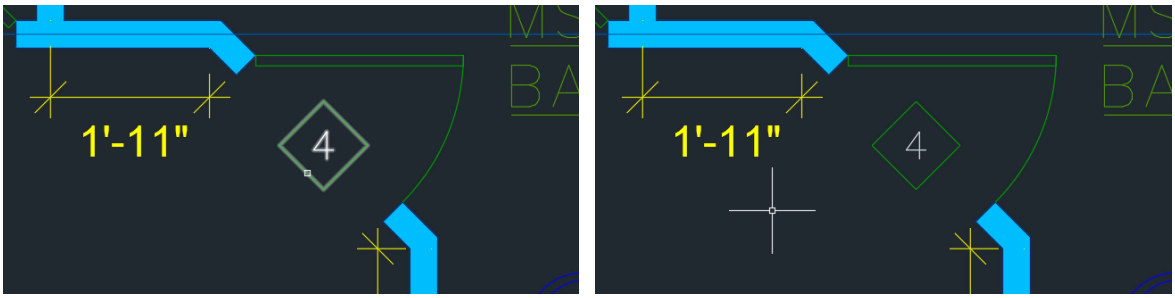


Figure 4: Selecting a Block with Attributes using the Explode Attributes (BURST) command.

Edit Block Attribute Values in Excel with ATTIN and ATTOUT

Ever need to update a batch of Block Attributes en-masse?

We commonly use block attributes for elements such as room tags. While updating individual attributes isn't too difficult, tasks requiring every block attribute be updated quickly becomes tedious and time consuming.

Update Block Attributes en-masse by doing the following:

1. Select a Block with Attributes you would like to update. Right-click, and then choose Select Similar to select every instance of the block in the drawing as shown in Figure 5.

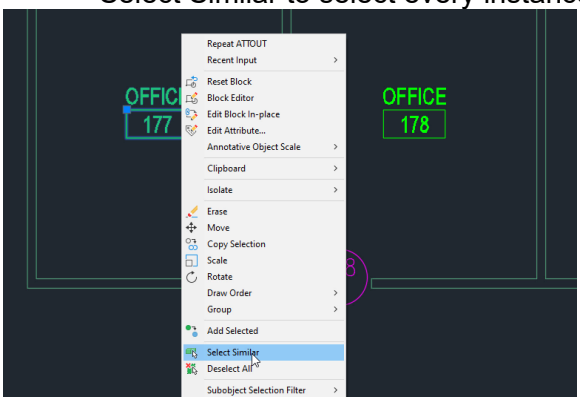


Figure 5: Quickly select all instances of a block with the Select Similar command.

2. With desired blocks selected, choose Export Attributes from the Blocks panel of the Express Ribbon tab shown in Figure 6. Specify a filename and location for the tab delimited text (TXT) file.

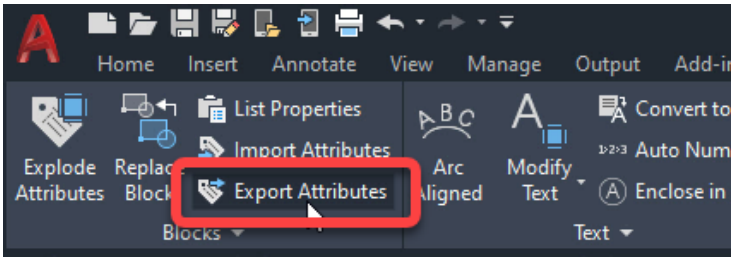


Figure 6: Choosing the Export Attributes (ATTOUT) command from the Express Ribbon tab.

3. Open the TXT file exported from AutoCAD as a tab delimited text file in Microsoft Excel as shown in Figure 7.

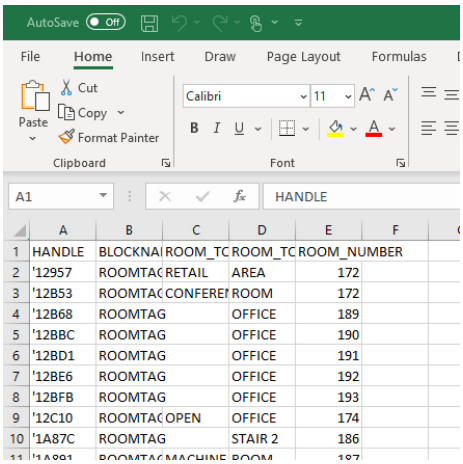


Figure 7: Tab delimited text file exported from AutoCAD opened in Microsoft Excel.

4. Use Excel formulas as possible to update Block Attribute values. In the example shown in Figure 8, an Excel formula is used to subtract 100 from each room number and then add 1000, resulting in a thousand numbering convention.

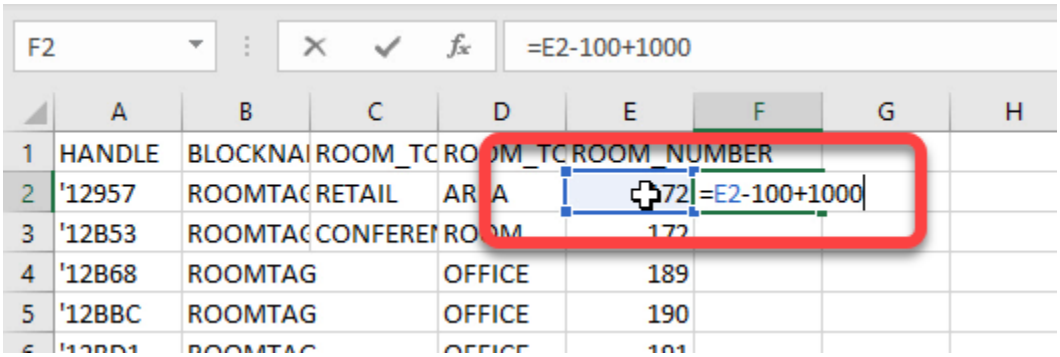


Figure 8: Using an Excel formula to update Block Attribute values.

5. Finalize data formatting in Excel by filling formulas, duplicating column headers, and hiding original columns as shown in Figure 9. Save the spreadsheet as a Tab Delimited Text (TXT) File.

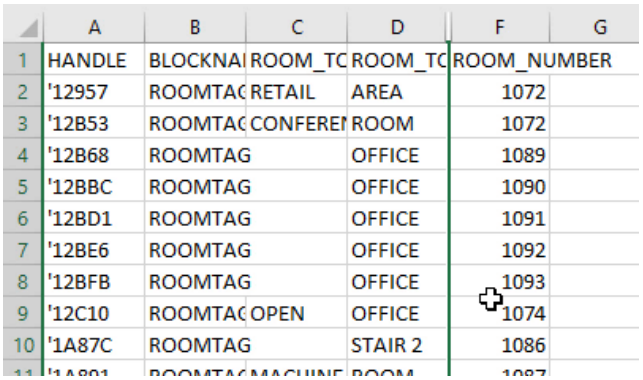


Figure 9: Finalized Block Attribute Data in Excel.

6. Choose Import Attributes from the Blocks panel of the Express Ribbon tab as shown in Figure 10Figure 10. Select the updated file from Excel.

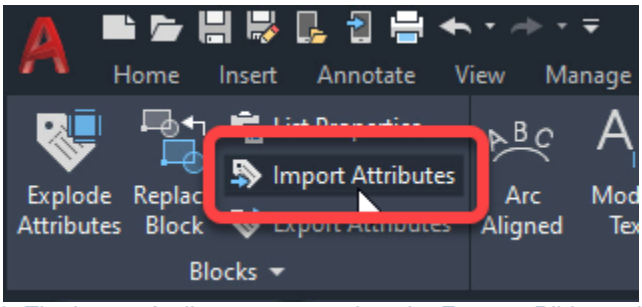


Figure 10: The Import Attributes command on the Express Ribbon tab.

7. Upon selecting the updated tab delimited text file, all Block Attributes are updated as shown in Figure 11.

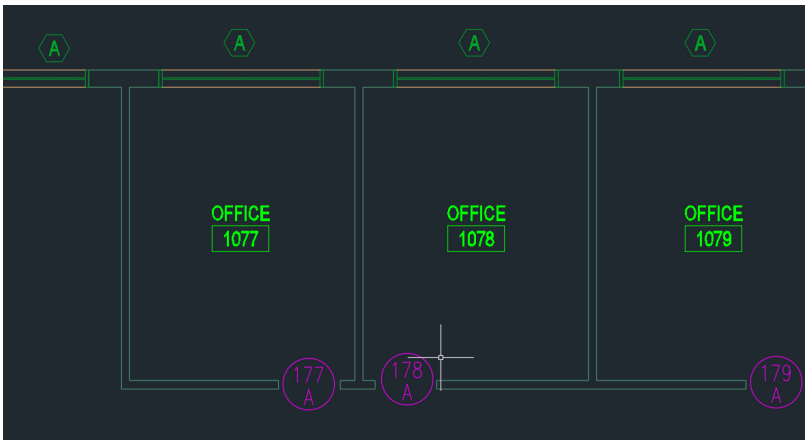


Figure 11: Block Attributes updates with values from Microsoft Excel.

Place Text Above and Below Dimensions with /X

Ever need text to display both above and below a dimension line?

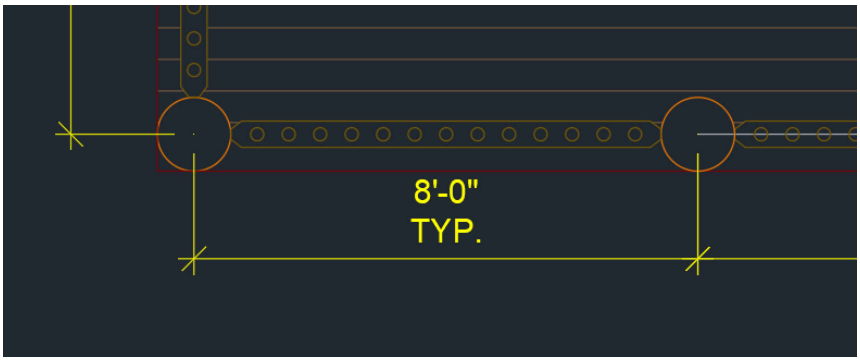


Figure 12: Dimension with measurement and Typical designation above the dimension line.

Dimension styles let you choose one or the other (see Figure 12), but not both, so how do you overcome this limitation as shown in Figure 13?

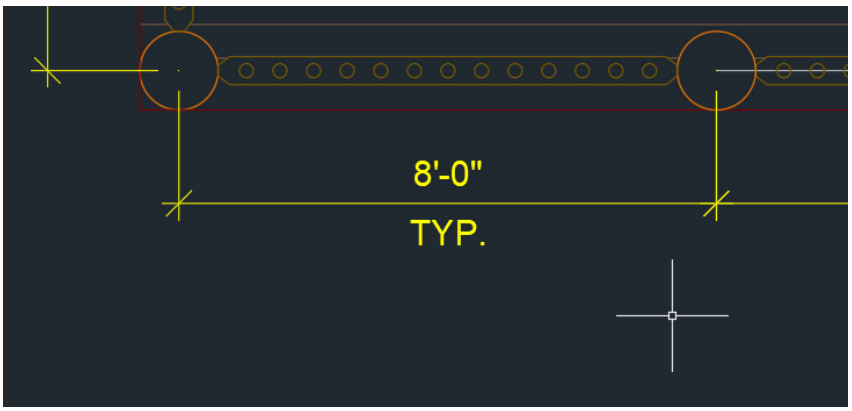


Figure 13: Dimension with measurement above the dimension line, and Typical designation below.

The secret rests with the \X line break. From the Properties Palette, update the Text Override setting to \X as shown in Figure 14.

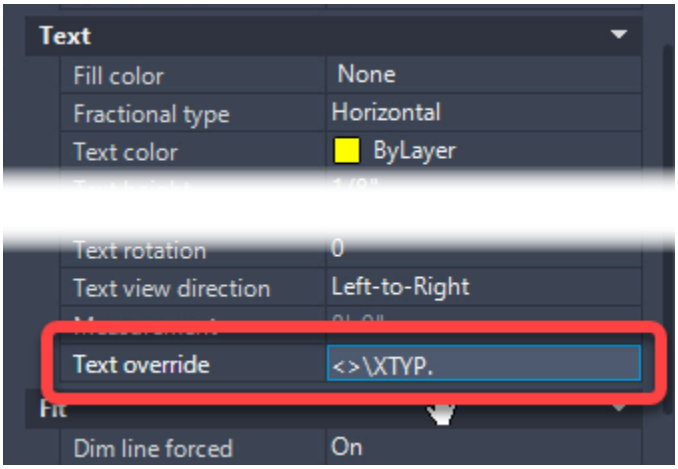


Figure 14: Adding the \X switch to the Text Override dimension property.

Fix overridden Dimensions with DIMREASSOC

What do you do when you inherit a drawing where the last drafter "fixed" all of the dimensions by manually entering values for each dimension (see Figure 15)?

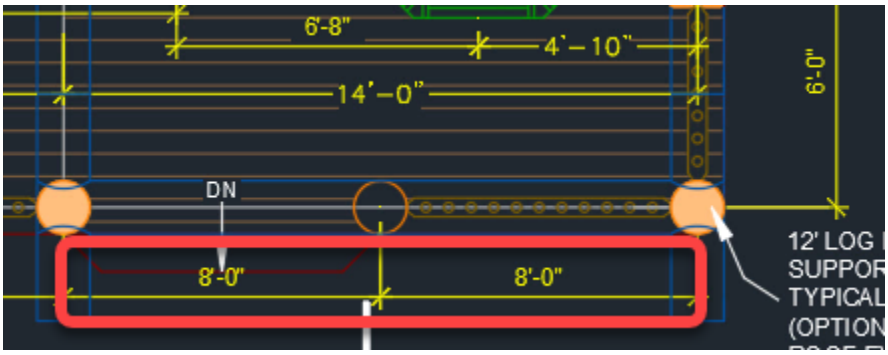


Figure 15: Overridden dimensions showing incorrect measurement.

Despite the urges, violence is not the answer, but the Dimension Reassociate (DIMREASSOC) can be (see Figure 16). With it you can quickly reset dimension values to their true measurement (see Figure 17), not overridden value.

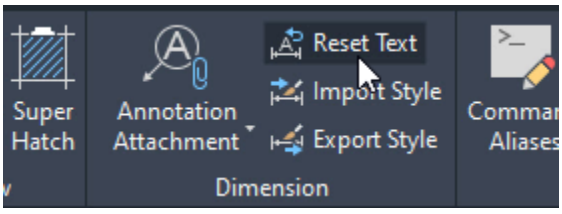


Figure 16: Choosing the Reset Text (DIMREASSOC) command from the Express Ribbon Tab

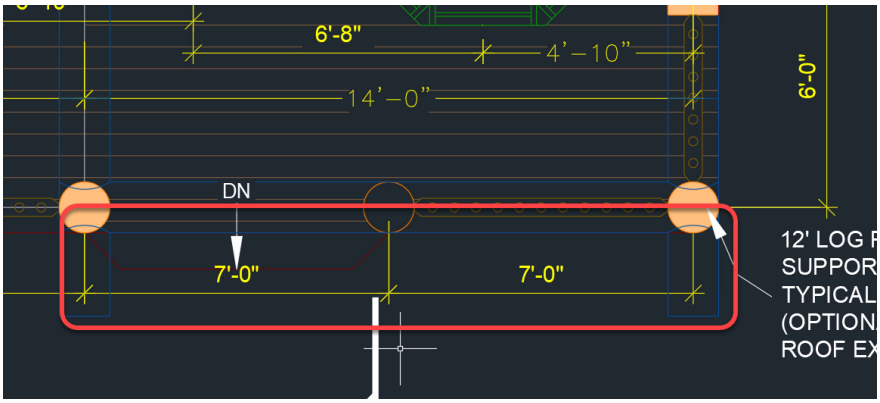


Figure 17: Updated dimensions showing their measured value.

Make Linetype Text Plan Readable

Are you constantly using the REVERSE command to make Linetype text plan readable (see Figure 18)?

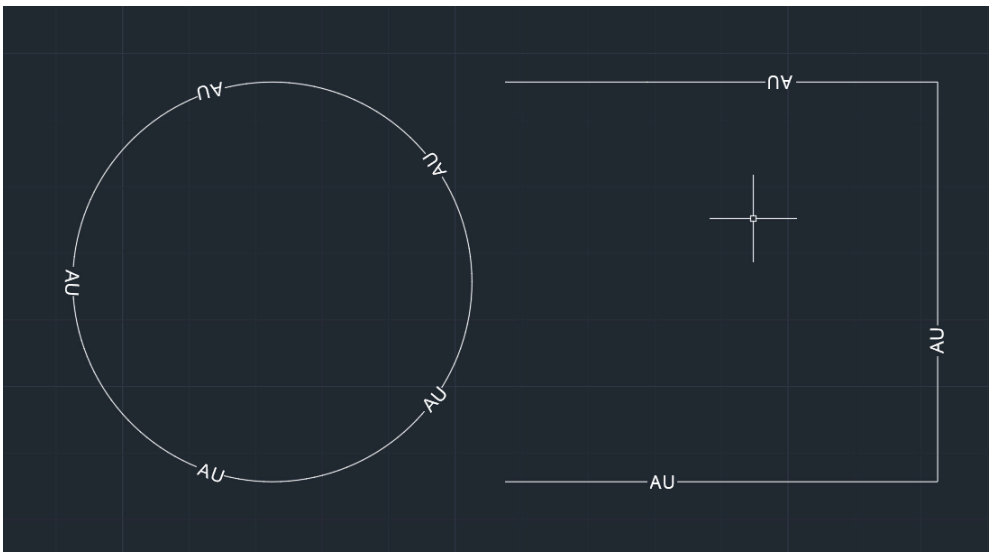


Figure 18: Linetype with text that is not plan readable.

A simple update to your Linetype file (LIN) will automatically rotate your linetype text. Just add the Upright parameter (U=0) to the Linetype definition using Notepad (see Figure 19) and reload the LIN file into your drawing (see Figure 20).

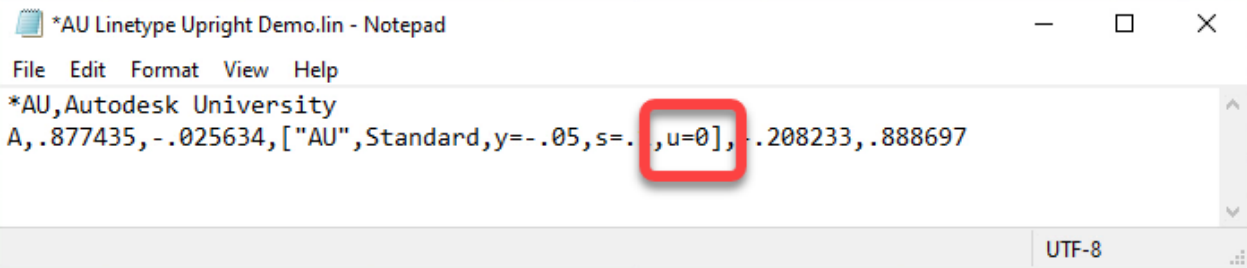


Figure 19: Adding the U=0 parameter to the Linetype Definition (LIN) file.

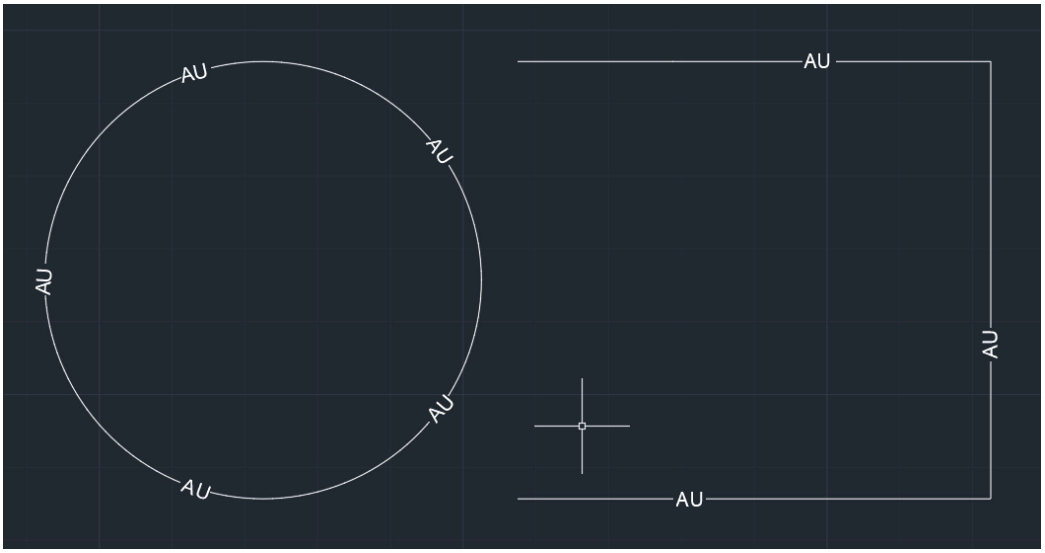


Figure 20: Updated Linetype Definition (LIN) with upright/plan readable text.

Create Linetypes the Super Simple Way

Need a custom linetype to display a string of text?

Linetype definition (LIN) files are ASCII based. This means you *could* write them from scratch in Notepad, but who has time for that? Use the Make Linetype Express Tool instead.

To create a custom AutoCAD linteype:

1. Draw your desired Linetype at it's plotted height (see Figure 21). That means, create text at 0.1"/0.125", without a scale factor applied.

Figure 21: Drawing the desired Linetype using a standard AutoCAD Line and DTEXT.

TIP: To create a Linetype with double quotes (“), use two single quotes(‘ ‘).

2. Choose the Make Linetype command from the expanded Tools panel of the Express Ribbon tab (see Figure 22).

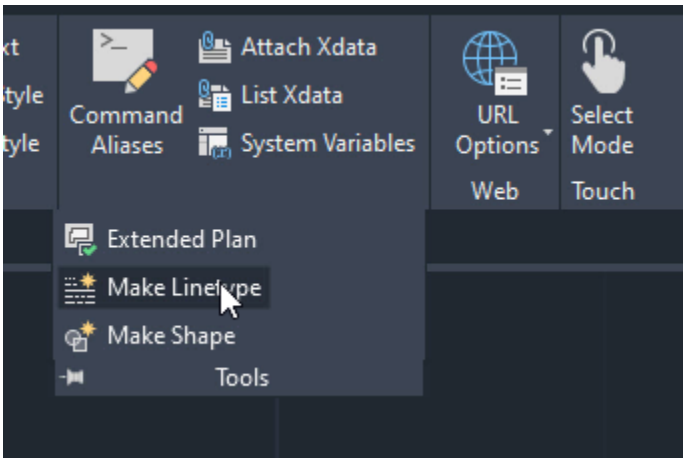


Figure 22: Choosing the Make Linetype command from the Express Ribbon tab.

3. Follow command prompts to specify Linetype definition information (Name, Description, etc) as shown in Figure 23.

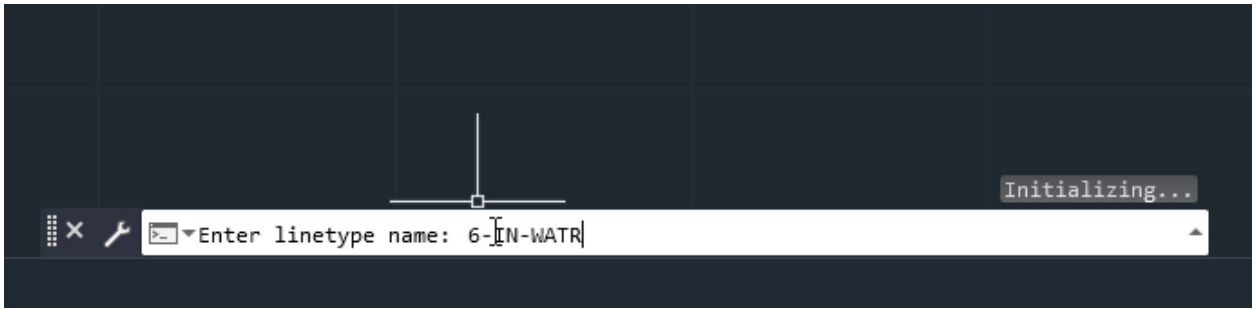


Figure 23: Specifying Linetype Definition information.

4. Use your newly created Linetype like any other AutoCAD linetype.

Drawing Sheet Management

Put Linetype Scale (LTSCALE) on Autopilot

Managing an assortment of full-scale and enlarged-scale viewports in a drawing and want your linetypes to appear the same in all views?

Set all three LTSCALE variables to 1. LTSCALE, PSLTSCALE, and MSLTSCALE.

Use Fields to Create a Plot Stamp

Ever need to track down the original DWG for a plot you're looking at, or better yet, ask the person who plotted it a question?

A plot stamp can answer these questions and more. While the PLOT command includes a Plot Stamp feature, Fields are far more versatile with modern versions of AutoCAD. Just place a MTEXT block along the edge of your sheet and add the desired fields.

To create a Plot Stamp with Fields:

1. Add an MTEXT entity to your titleblock.Choose Field from the Insert panel of the contextual Text Editor Ribbon tab (see Figure 24).

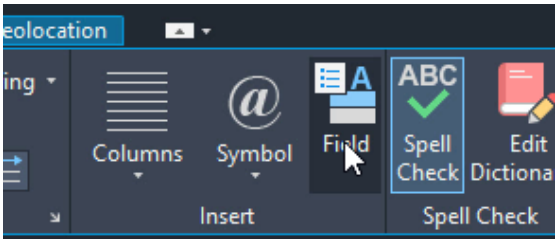


Figure 24: Choosing Field from the Insert panel of the contextual Text Editor Ribbon tab (Multiline Text Editor).

2. Choose the Field(s) you would like included in your plot stamp (see Figure 25).

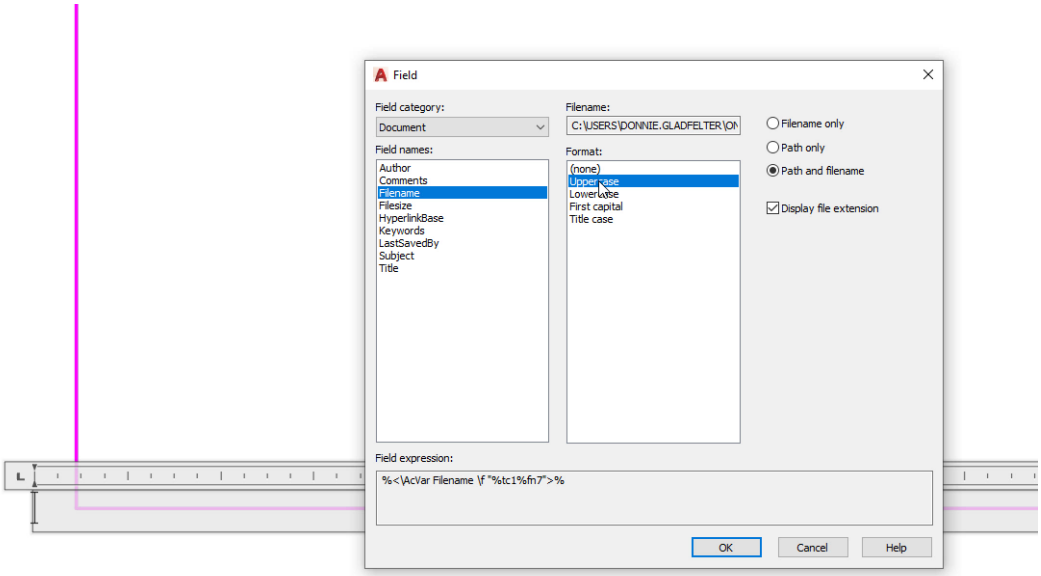


Figure 25: Adding Document propety fields to Multiline Text.

3. Click Close Text Editor button from the contextual Text Editor Ribbon tab to finish editing your Multiline Text entity and finish composing your plot stamp shown in Figure 26.

Figure 26: Finished Plot Stamp created with Fields.

Quickly Copy Layout Tabs with Ctrl

Need to duplicate an existing Layout in your drawing?

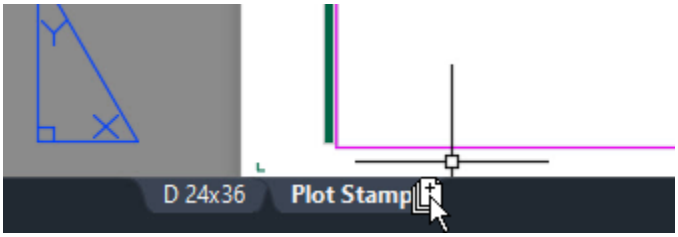


Figure 27: Press-and-hold the Ctrl key while dragging Layout Tabs to copy them.

Instead of the (Layout) Move and Copy function, press-and-hold the Ctrl key as you click-and-drag on the existing Layout as shown in Figure 27.

Use Change Space to Quickly Determine Viewable Area of Sheets and Align Space to Set Viewport Alignment

Draw Rectangle over viewable area of sheet, use CHSPACE to send to Model Space.
Use the viewable area outlines to layout sheets in Model space.

Finally, use Align Space to line up viewable area rectangles in Model Space with your Layout Tab Viewports.

To determine the viewable area and setup sheets:

1. Create and set the desired scale of your viewport (1/4” = 1’-0”, 1” = 50’, 1:50, etc.) as shown in Figure 28. The position or visible area of the viewport is not important at this stage.

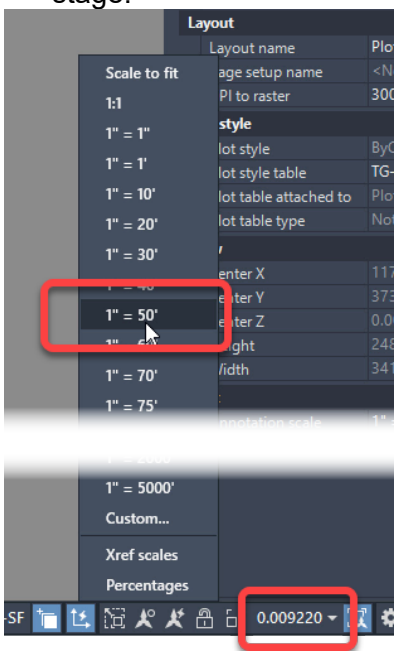


Figure 28: Setting the viewport scale.

2. In Paper Space (Layout Tab), draw a rectangle atop the viewport.

3. Select the Rectangle, and then choose the Change Space (CHSPACE) command from the expanded Modify panel of the Home Ribbon Tab shown in Figure 29.

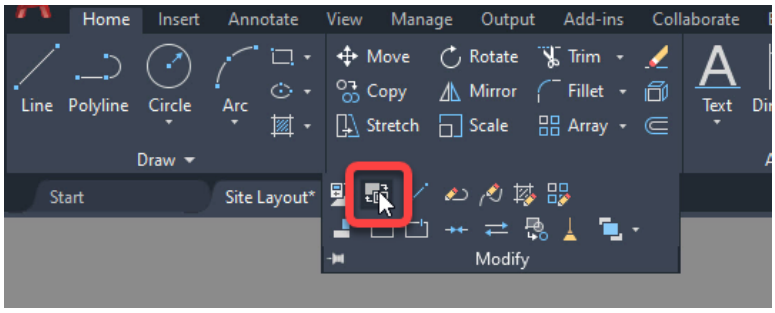


Figure 29: Choosing the Change Space (CHSPACE) command from the Ribbon.

4. Switch to Model space to observe the Rectangle placed in Model space at real world scale (see Figure 30).

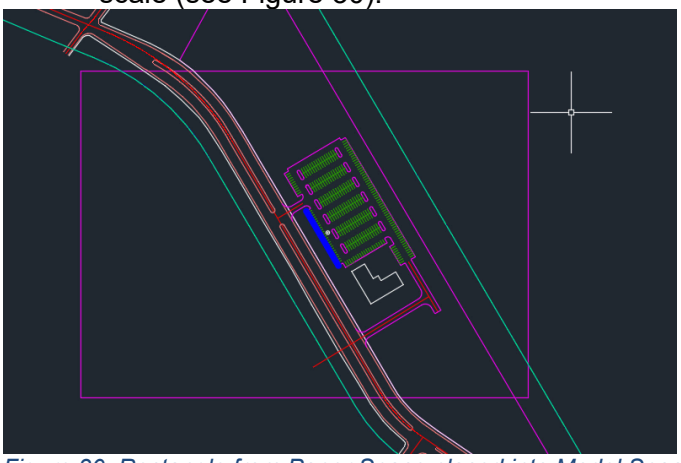


Figure 30: Rectangle from Paper Space placed into Model Space at real-world scale.

5. Use standard Modify commands (Move, Rotate, Copy, etc) to layout your sheets in Model Space as shown in Figure 31.

Figure 31: Layout rectangle moved and rotated into place to represent the visible area of a site plan sheet.

6. Switch back to Paper Space (Layout Tab), and then click into the desired viewport.

7. Enter UCS at the command line and then choose the Object option. Select the layout rectangle positioned in Model Space (see Figure 32).

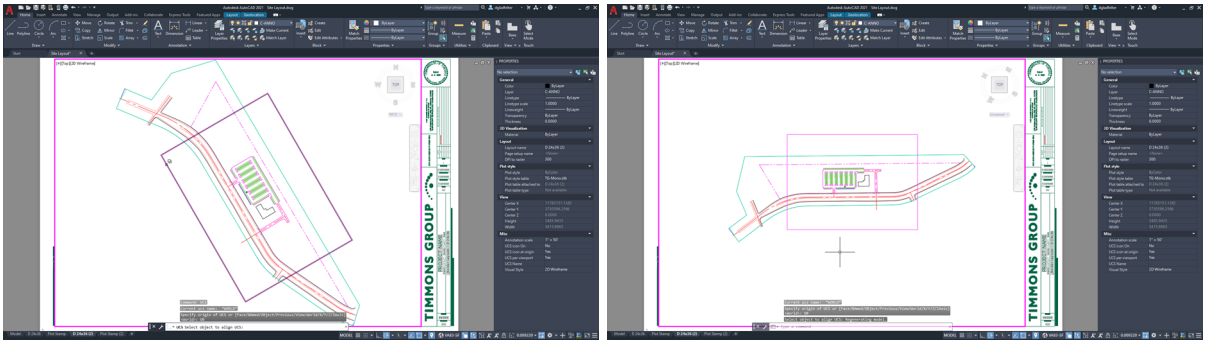


Figure 32: Original layout rectangle (left), viewport rotated to match layout rectangle (right).

8. If necessary, set the Viewport scale.

9. Choose Align Space from the Layout panel of the Express Ribbon tab shown in Figure 33. Select a corner of your viewport and a corresponding corner of the rectangle in Model Space.

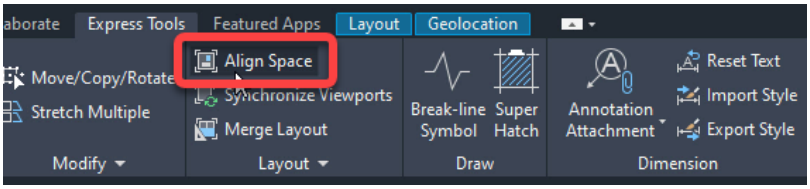


Figure 33: Choosing the Align Space command from the Express Ribbon Tab.

Customization

Add the Coordinate Readout to the Status Bar

Need to quickly query the X (Easting), Y (Northing), and/or Z coordinate of geometry in your drawing?

Enable the Coordinate readout on the Status bar by clicking the hamburger icon from the Status Bar, and then choosing Coordinates as shown in Figure 34.

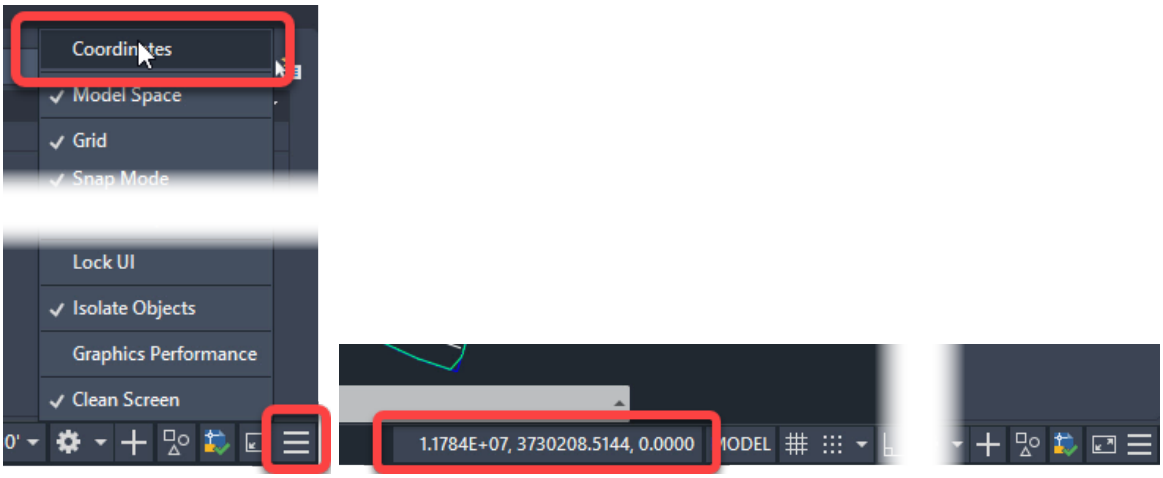


Figure 34: Enabling the Coordinates readout from the Customize menu (left), and the Coordinate readout shown in the Status Bar (right).

Easily Select Overlapping Objects with Selection Cycling

Ever have trouble selecting the object you want verses the object AutoCAD thinks you want in busy areas of our drawing?

Figure 35: Enabling Selection Cycling from the Customize Status Bar menu.

Enable Selection Cycling in the AutoCAD Status Bar to make selecting overlapping objects easier. Once enabled (see Figure 35), two overlapping squares will appear in the upper-right quadrant of your cursor when AutoCAD isn't sure what you would like to select as shown in Figure 36.

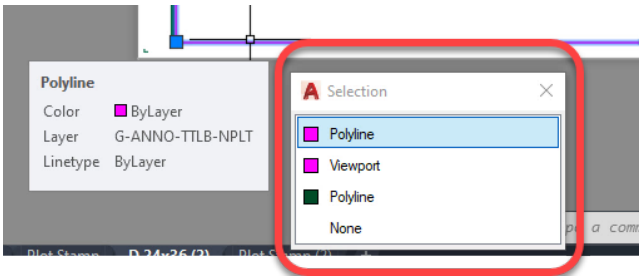


Figure 36: Selection Cycling menu when selecting the viewport/polyline boundary.

Modify Rollover Tip Data

Wish the rollover tips displayed information more useful to you?

Use the CUI editor to specify the object properties you would like to see when hovering over objects in your drawing.

To customize Rollover Tip Data:

1. Choose User Interface from the Customization panel of the Manage Ribbon tab to open the Customize User Interface (CUI) command.
2. Choose Rollover Tooltops (a), the Object whose Tooltips you would like to modify (b), and finally the Object Property you would like to include (c) as shown in Figure 37.

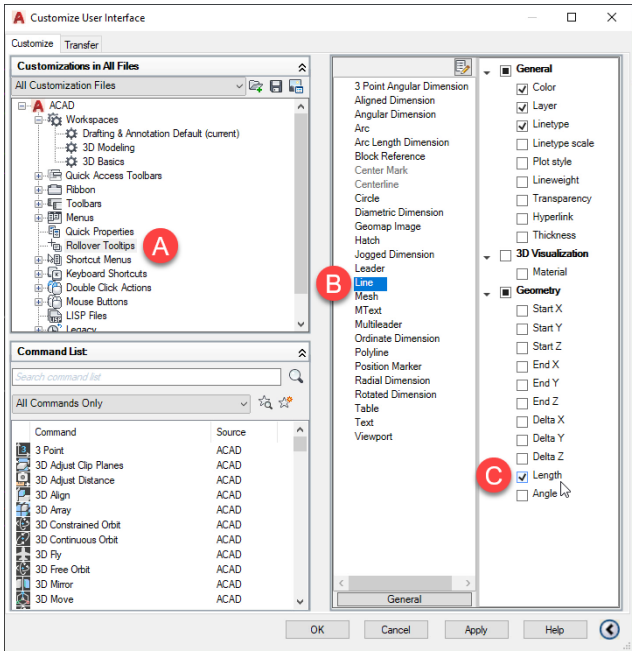


Figure 37: Modifying the Rollover Tooltip data for Lines in the Customize User Interface dialog box.

3. Hover over the object whose Rollover Tooltips you changed to see the new Object Property displayed.

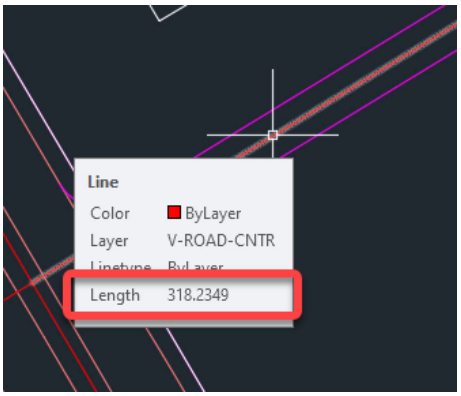


Figure 38: The Length Object Property displayed as a Rollover Tooltip for Lines.

Quantity Takeoff

Perform Linear Quantity Calculations with Fields

Do you have to count typical-width objects, like parking stalls, across your drawing?

Not only is such a task tedious and time consuming, it's also one where the tedium will drive you to lose count halfway through. Cast those inefficiencies aside using Fields with a Conversion Factor applied.

Do the following to perform linear calculations using fields:

1. Use the Quick Calculator to establish the distance that will equal 1. In this example, each ~8.5-foot parking stall should be counted as 1, thus we use the calculator to calculate 1/8.5 (see Figure 39).

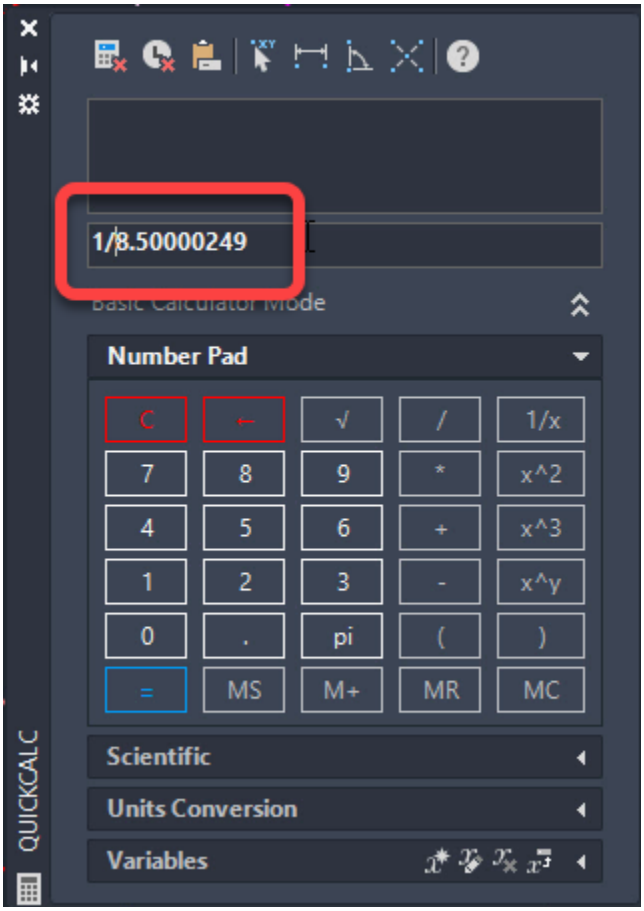


Figure 39: Using the Quick Calculator to determine what distance equals a single stall.

2. If using a Block with Attributes, open the Enhanced Block Attribute Manager (BATTMAN), then right-click for Value, and choose Insert Field as shown in Figure 40.

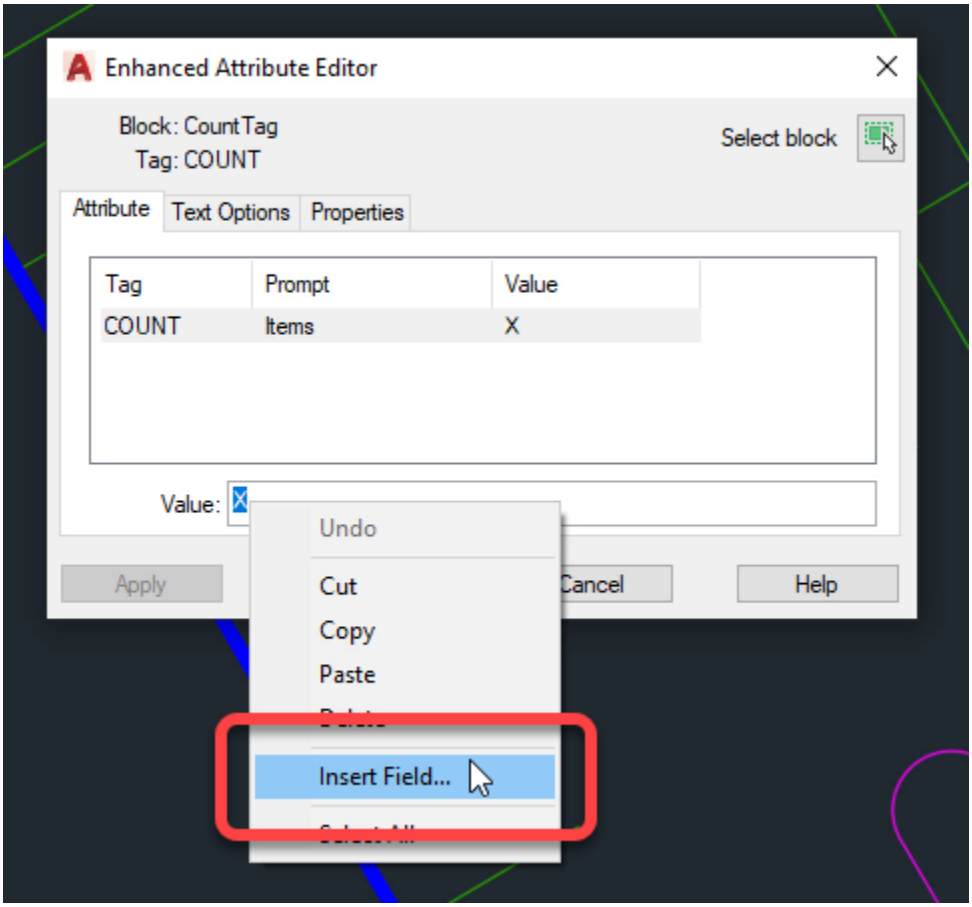


Figure 40: Inserting a Field from the Enhanced Block Attribute Manager dialog box.

3. Do the following from the Field dialog box as shown in Figure 41:

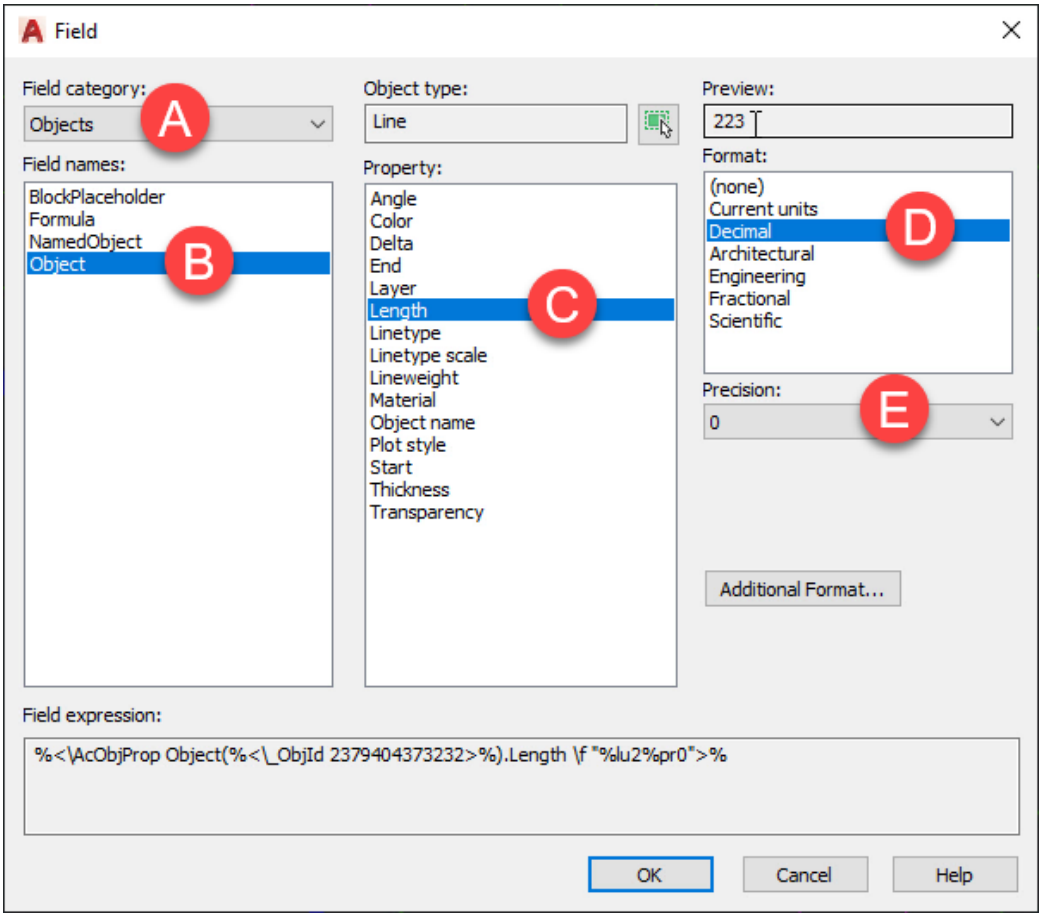


Figure 41: Configuring the Parking Count field.

a. Field Category: Objects
b. Field Names: Object
c. Object Type: Select a line in your drawing, then select the Length Property.
d. Format: Decimal
e. Precision: 0

4. From the Field dialog box, click the Additional Format button, and then input the value calculated in Step 1 as the Conversion Factor as shown in Figure 42.

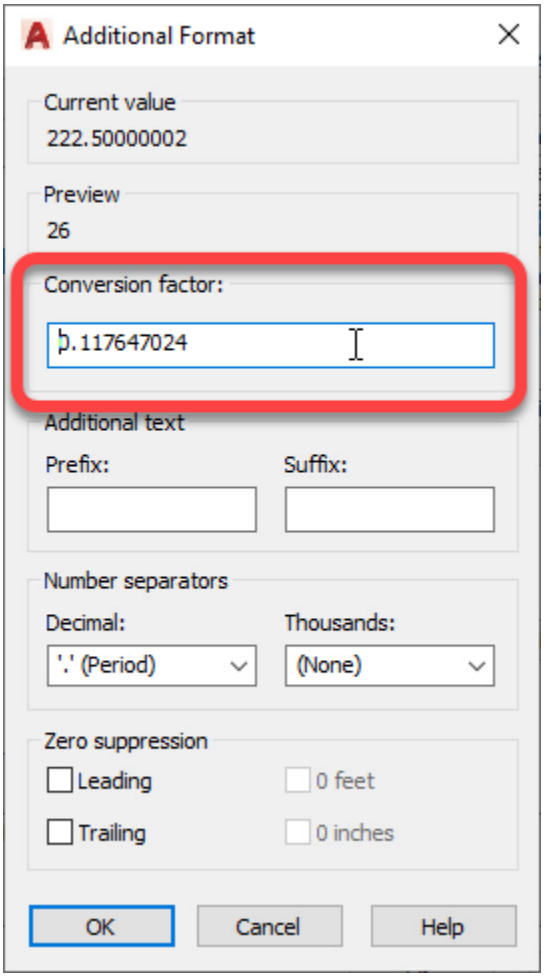


Figure 42: Entering a Field Conversion Factor to determine the parking count.

5. Click OK until you return to Model Space. The Field now reports the number of parking stalls as a function of the overall length of the parking run (see Figure 43).

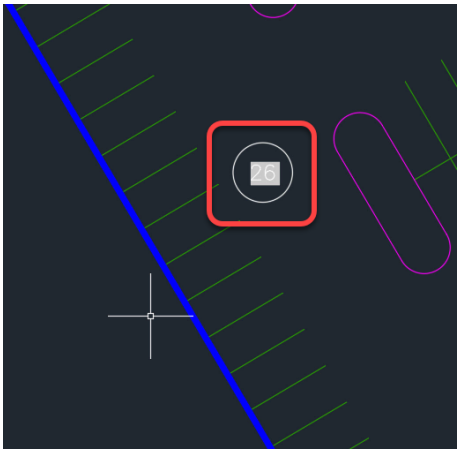


Figure 43: Parking Count dynamically established from the Length Field property.

Dynamically Count Blocks with Data Extraction Tables

How can you make sure your block quantities are always up-to-date with the current version of your design?

Block insertions are constantly added and removed throughout the lifecycle of a project and often represent a feature you need to maintain up-to-date quantities for. Data Extraction tables let you do just that by creating a dynamic table of the number of block insertions in your drawing.

Do the following to dynamically count blocks in a drawing:

1. Choose Extract Data from the Tables panel of the Annotate Ribbon tab (see Figure 44).

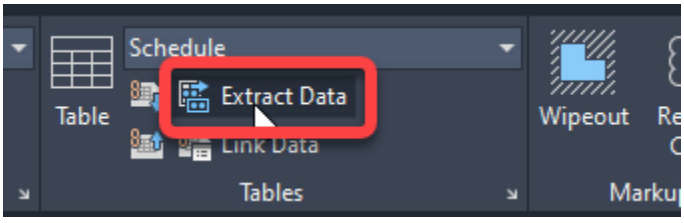
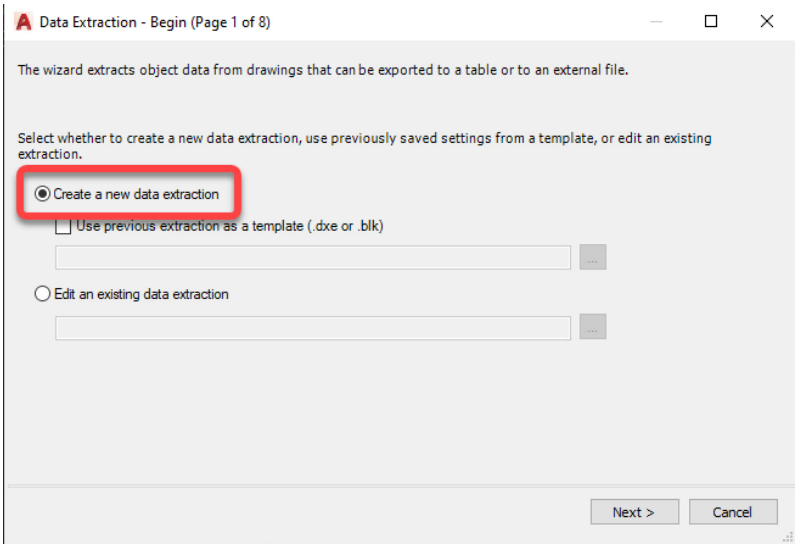


Figure 44: Starting the Data Extraction (EATTEXT) command from the Ribbon.

2. Choose Create A New Data Extraction from the Data Extraction – Begin dialog box.



3. Specify a location for the Data Extraction file. It's typically best to save in the same project directory as your drawing.

4. Specify the drawings to perform the Data Extraction on from the Data Extraction – Define Data Source dialog box (see Figure 45). Only the current drawing is included by default, although you can add more drawings as needed.

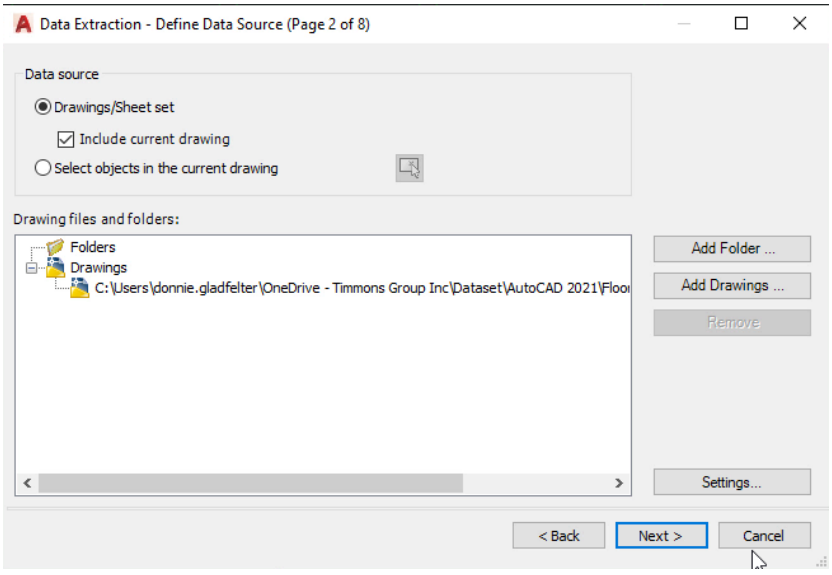


Figure 45: Specifying the drawings to extract data from.

5. Choose the Block(s) whose data you would like to extract from the Data Extraction – Select Objects dialog box (see Figure 46).

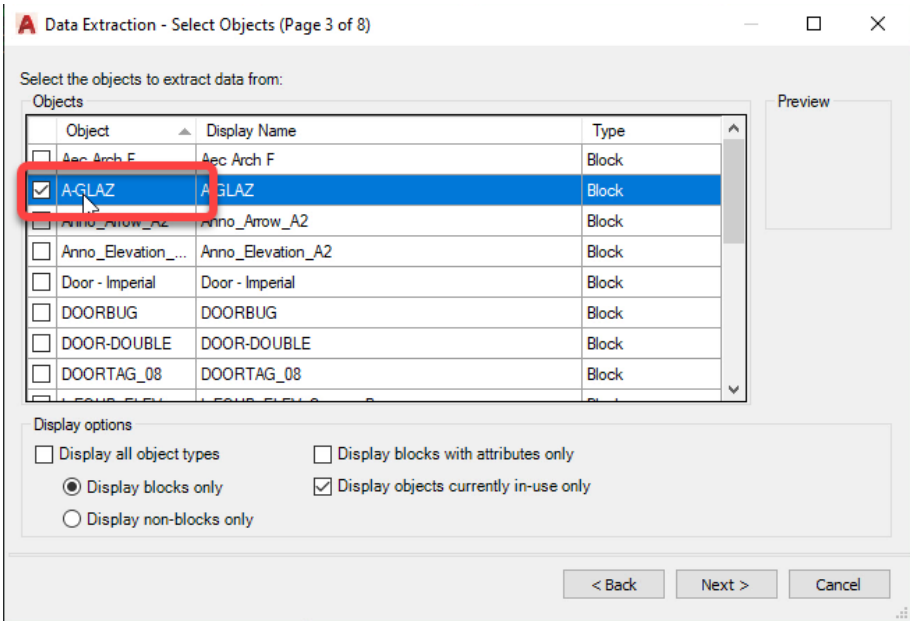


Figure 46: Choosing the A-GLAZ block as the block whose data to extract.

6. Choose the Properties to extract from the Objects specified in Step 5 (see Figure 47).

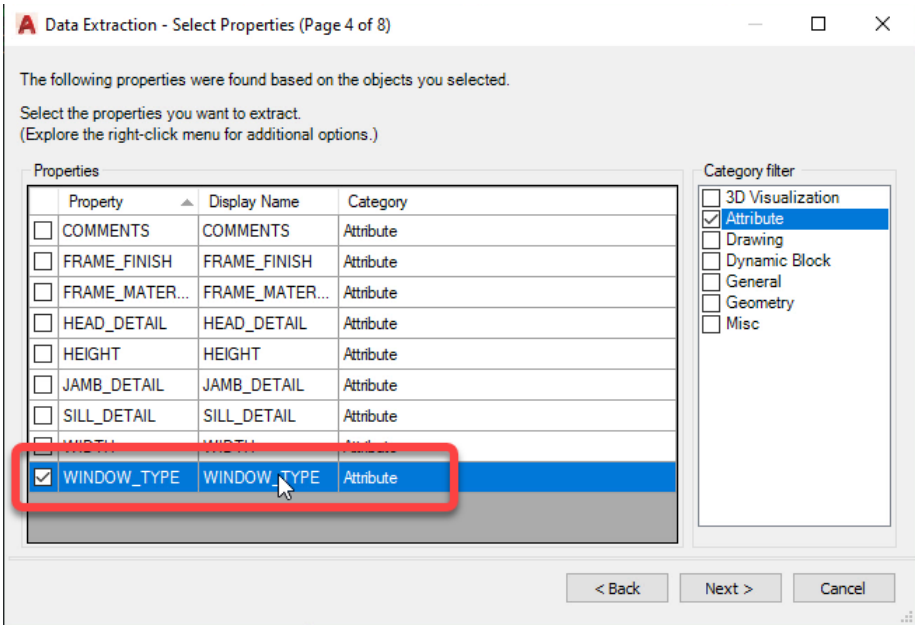


Figure 47: Choosing the WINDOW_TYPE Attribute value to extract.

7. Sort and organize extracted data from the Data Extraction – Refine Data dialog box (see Figure 48).

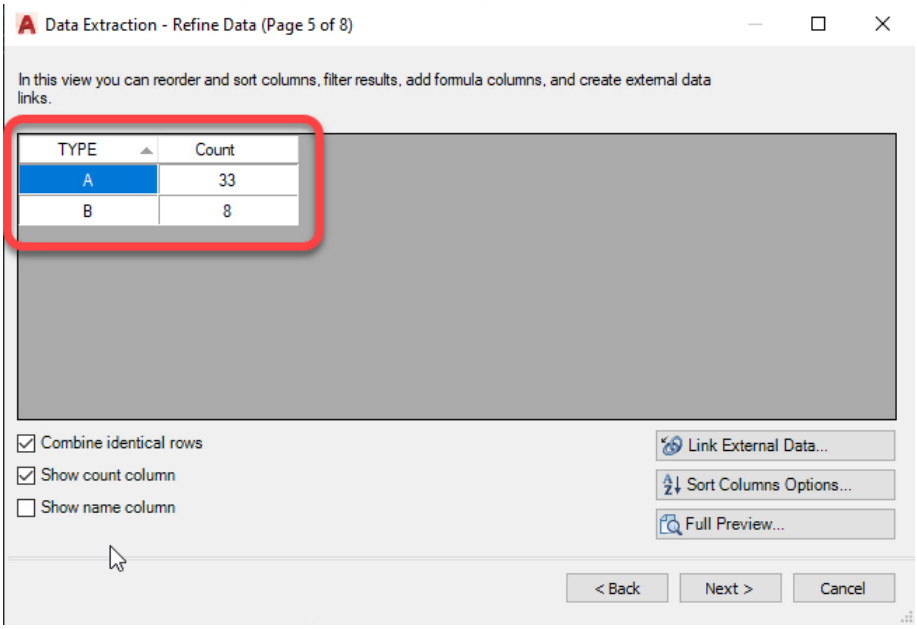


Figure 48: Sorting the extraction by the TYPE property and hiding the Block Name Column from the Data Extraction.

8. For a dynamic table, choose Insert Data Extraction Table Into Drawing from the Data Extraction – Choose Output dialog box (see Figure 49).

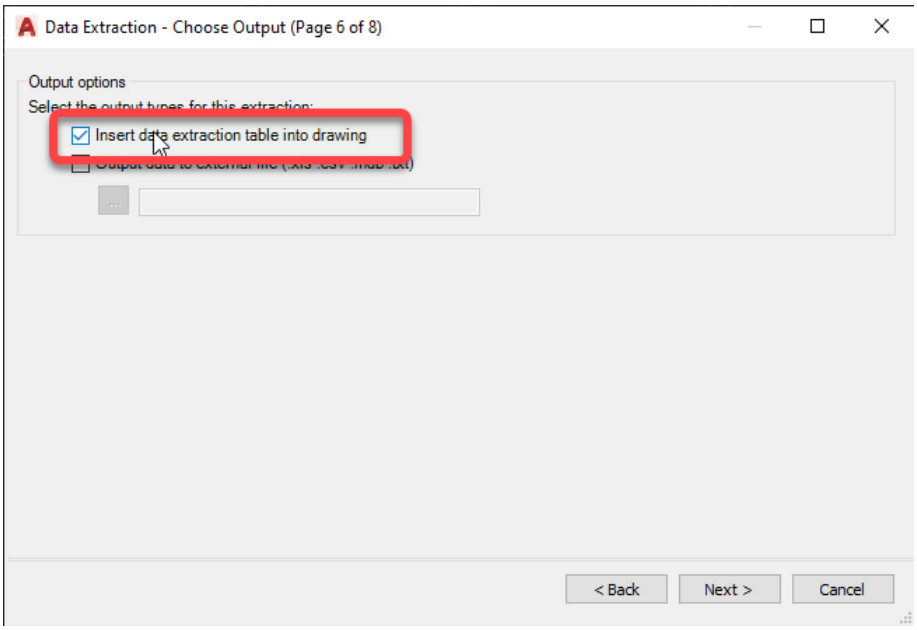


Figure 49: Specifying the current drawing as the output location for the Data Extraction table.

9. Configure your AutoCAD Table by choosing a Table Style and providing a title for the Table from the Data Extraction – Table Style dialog box (see Figure 50).

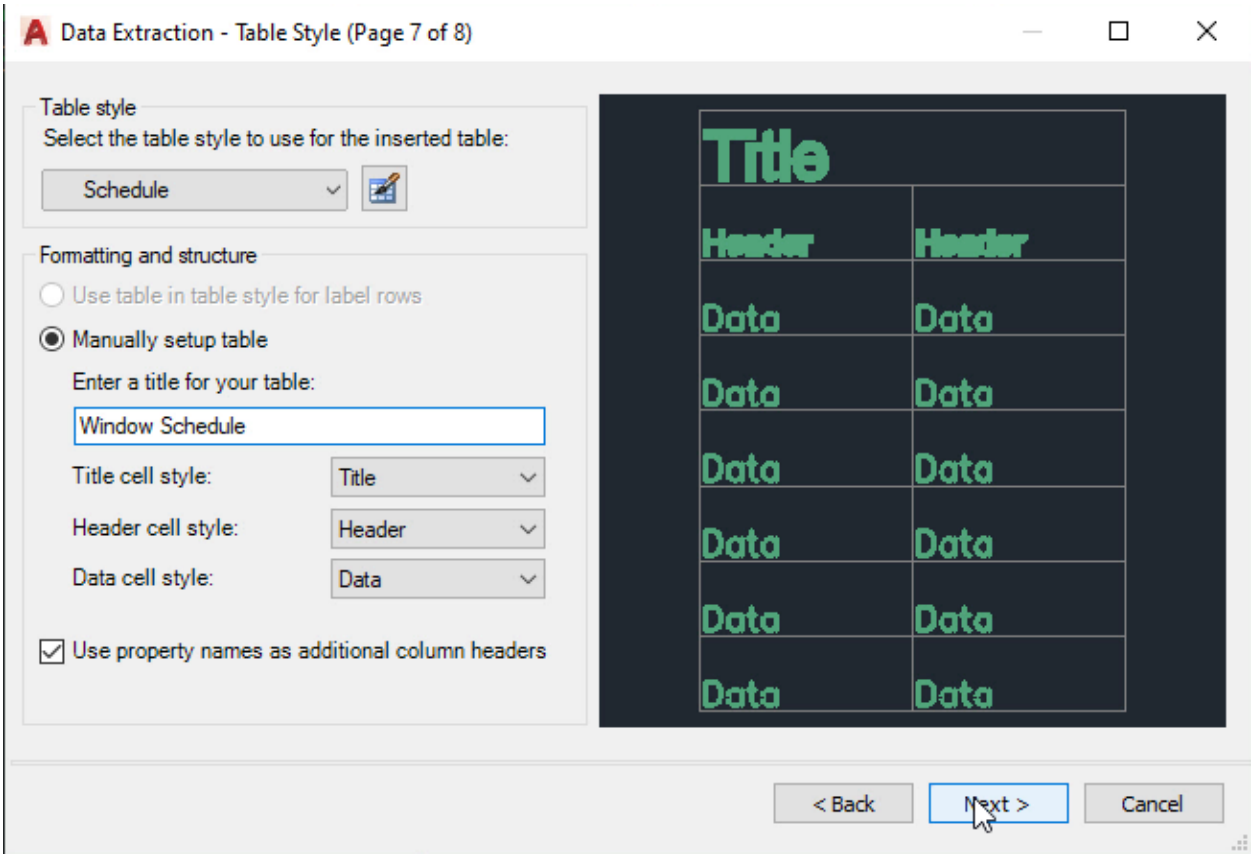


Figure 50: Specifying Table Insertion preferences from the Data Extraction - Table Style dialog box.

10. Follow the command prompts to place the Data Extraction table into your drawing as shown in Figure 51.

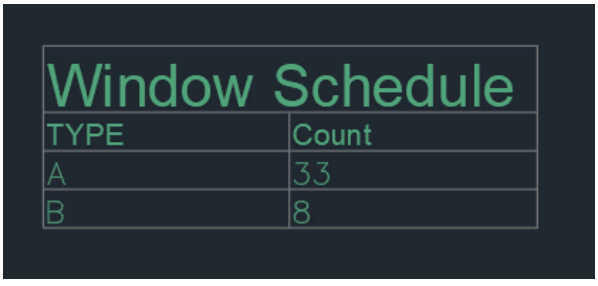


Figure 51: The final Data Extraction Table as an AutoCAD Table object in the current drawing.

11. Update the Data Extraction Table by selecting any cell within the Table, and then choosing Download From Source from the Data panel of the contextual Table Cell Ribbon tab shown in Figure 52.

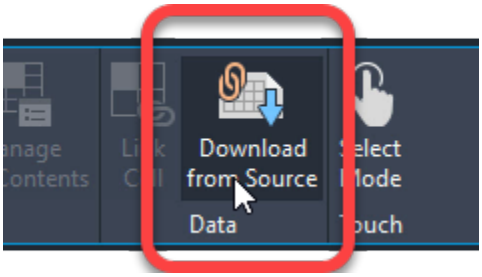


Figure 52: Update the Data Extraction Table using the Download From Source command on the contextual Table Cell Ribbon tab.