Reference: Advanced Features

This chapter describes how to print or plot your drawings as well as working with database entities.

9

In this chapter:

- Create drawings based on several different zones
- Edit an existing ZAC database
- Create a new ZAC database
- Alter prefabricated parts
- Export ZAC drawings
- Use Plot Manager for multiscale plotting

Getting an Overview

By this time, you've mastered the basics of drawing with ZAC. Now, you are ready for more challenges.

Objectives

You will be able to:

- Create a drawing based on several different zones
- Edit an existing ZAC database
- Create a new ZAC database
- Alter prefabricated parts
- Export ZAC drawings
- Use Plot Manager for multiscale plotting

Creating a Drawing Based on Different Zones

You can create a drawing with several different zones and their variations. For example, you may have Zone A with variations A-1, A-2, and A-3. Then, you design a completely different Zone B with its variations B-1 through B-17 and Zone C with variations C-1 through C-9. This gives you tremendous flexibility, particularly with complex projects.

Each ZAC zone is firmly attached to its zone editor, which controls the Z-height. If you change the Z-height of one interior wall and later change that zone's editor, the Z-heights of all interior walls will in that particular zone will be reset to the new value.

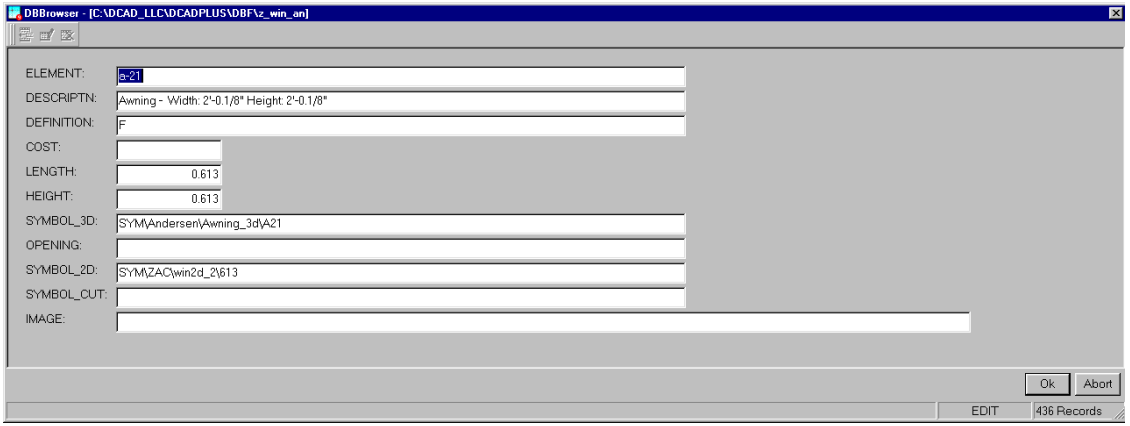
Zone A and its variations are stored on separate layers in DataCAD Plus; the same is true for Zone B and its variations and so forth. Since you are limited to 1,000 layers in DataCAD Plus, this gives you plenty of room to develop a complex, multi-zone project with many variations.

Editing an Existing ZAC Database Record

If an item in a ZAC database doesn't precisely meet your client's needs, you can edit or change individual record names and fields.

➔ To edit an existing record in a ZAC database:

1. Press Backspace. The database appears.
2. Highlight the record you want to change and press Backspace. The record appears.



3. Make changes to the fields as necessary.

In some fields (such as LENGTH and HEIGHT), you can only use numbers. Other fields (such as DESCRPTN and SYMBOL_3D) accept both numbers and characters. Each field has its own maximum length that you cannot exceed.

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4. Click Ok or press Enter to confirm the new field entries to the record. The database screen reappears.
5. Click OK or press Enter to store the changes you made in the record to the ZAC database. The drawing window reappears.

Creating a New ZAC Database

Creating a ZAC New Wall Type

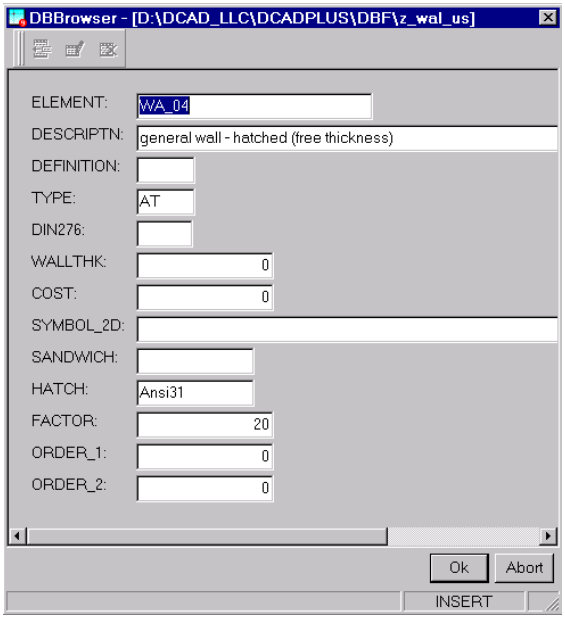
There are two ways to add a new wall type to the existing ZAC database (Z_WAL_US.dbf): the simple and the complex method. The simple method uses an existing database as a model. The complex method allows you to create your own wall database

Simple Method for Creating a ZAC New Wall Type

➔ To create a new ZAC wall type based on an existing database:

1. Open an existing ZAC wall database (Z_WAL_US.dbf) by using ARCHTECT, Walls, and Backspace.
2. Highlight one of the existing free thickness entries (such as WA_04) as the basis for the new entry.
3. Click on the Add icon. The DBBrowser dialog box appears.

If the Z_WAL_US database does not load or you want to open a different one, select ARCHTECT, Walls, Order (or press Alt + Backspace), and dBase. Choose the appropriate database.

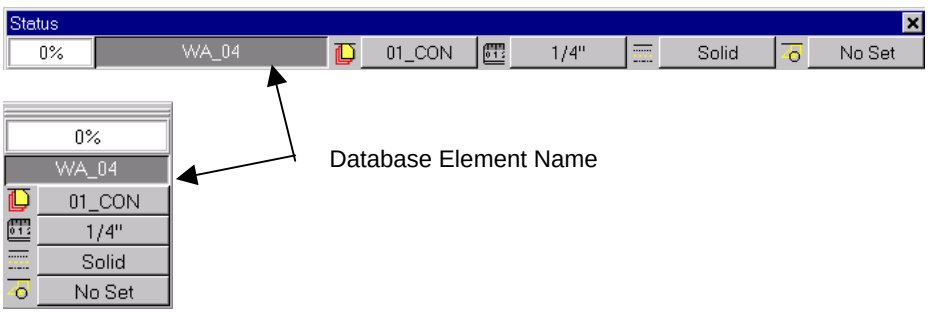


4. Use the following guidelines when inputting information into the fields of the DBBrowser dialog box:

Element	Add a new name; this is how the database identifies each wall type entry.
Descriptn	Enter a detailed description for the new wall type.
Definition	Leave the field blank if you wish to freely define the wall thickness in DataCAD Plus; enter F if you want the wall to have a fixed overall thickness.
Type	Leave as is.
Din276	Leave as is.
Wallthk	Enter a value in meters if you defined this wall type as a fixed thickness; leave it at 0 if this is a freely definable thickness.
Cost	Leave it at 0.
Symbol_2D	Leave it blank.
Sandwich	Leave it blank.
Hatch	Enter the hatch pattern you want to use (you can enter the name of any pattern defined in the Pattern menu in the Hatch menu in DataCAD plus) if you want the walls hatched when generating a 2D construction document. Leave the field blank if you do not want the walls hatched.
Factor	Enter a hatch scale (1 – 9999) for the hatch pattern defined in the previous field.
Order_1	Leave it set at 0.
Order_2	Leave it set at 0.

5. Click on Ok after entering all the field values for the new database record.

You have now successfully added a new wall type into your ZAC database. Now, you can use this wall in your drawing. When you select a database component, the Element name appears next to or below the percentage indicator in the Status bar, depending on the way you set up your DataCAD Plus screen.



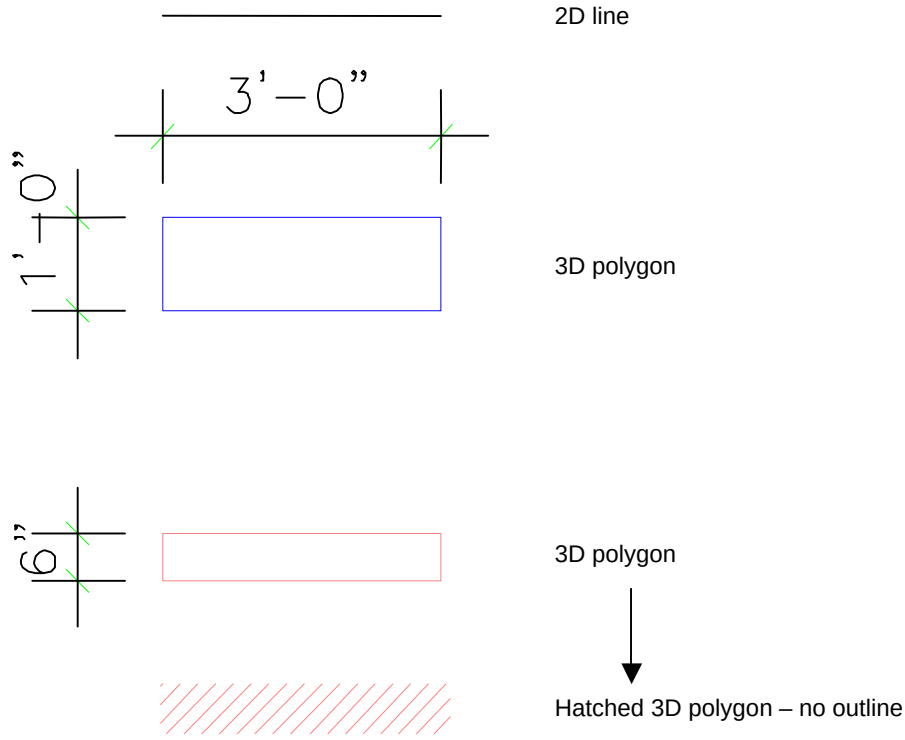
Using the ZAC Wall You Created

If you defined a fixed wall thickness, you can begin drawing walls by selecting ARCHTECT and Walls. If you created a freely definable thickness, you must select WallThk from the Walls menu and enter a value before you can draw walls.

After drawing the walls, select Gen_2D and START from the ARCHTECT menu. The walls will be drawn and hatched based on your inputs in the database for the wall type you created.

Complex Method for Creating a ZAC New Wall Type

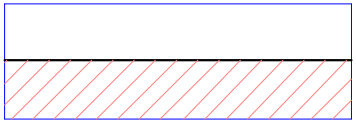
These three components make up the complex wall type you will now define:



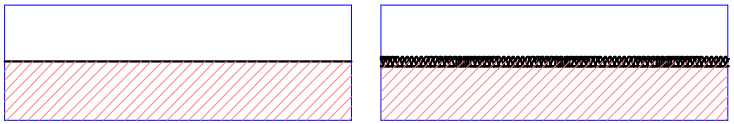
➔ To draw the walls:

1. Set the current input mode to Relative Cartesian (x,y) by pressing Insert until REL CART is displayed on the Coordinates bar.
2. Turn off (deactivate) W on the Switch bar.
3. Draw a 2Dline by picking a point on the screen, pressing Spacebar, and entering 3'-0" for X and 0 for Y.

4. Draw a polygon by pressing J and selecting Polygon and RectAng. Pick a point on the screen with the left mouse button, press Spacebar, and enter 3′-0″ for X and 1′-0″ for Y.
5. Draw another rectangular polygon with 3′-0″ for X and 6″ for Y. Hatch that polygon by pressing H; selecting Pattern, ANSI31, Factor; and setting the hatch scale to 20. Make sure Associat and NoOutLin are activated. Select Entity and click on the second rectangular polygon. The polygon should now be hatched.
6. Combine these separate entities into one composite drawing so that the line and smaller hatched polygon fit inside the larger one. Reposition the entities by pressing M and selecting Move, Drag, and Entity. Click on the entity, snap to the larger polygon, and drag the line and the hatched polygon until your drawing resembles this:



7. Make two additional copies of this composite drawing by pressing C, indicating the distance from the original, clicking on Area, and surrounding the composite drawing with an rubberband box.
8. Vary each copy slightly. Change the Hatch factor for the pattern (see step 5) to 10 for each copy of the composite drawing.
9. Change the line type for the 2D line in the second copy by pressing Alt + C and LineType. Select an option (such as ZigZag), activate Entity, and click on the line to make it take effect.

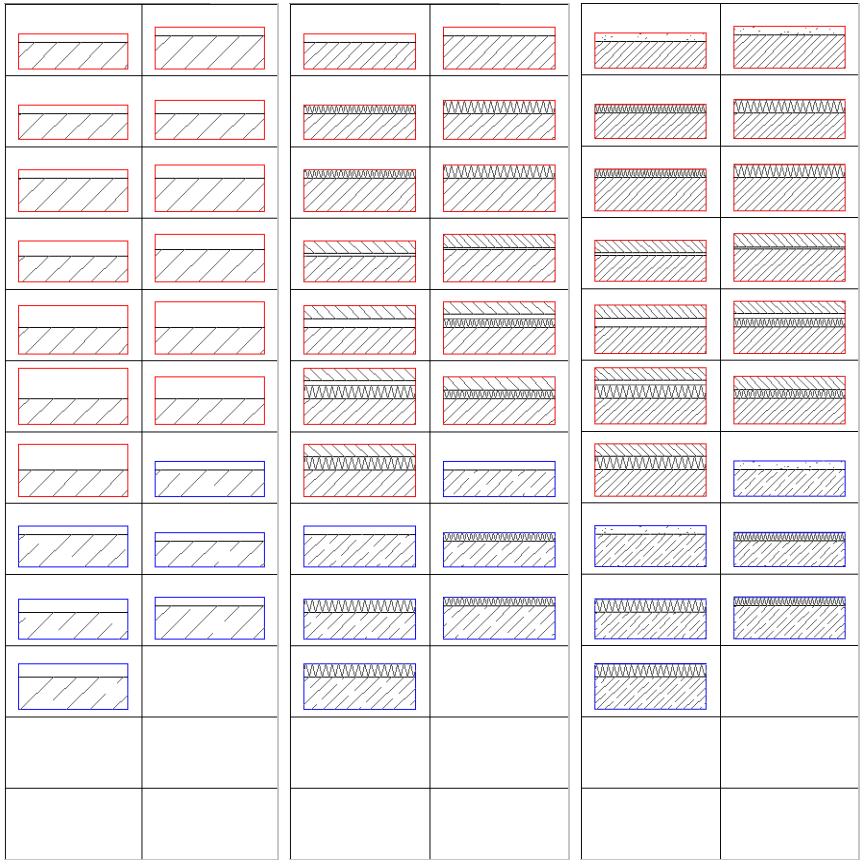


You can use any number of lines and polygons within the master polygon. You can use any of the available linetypes. The hatched polygons can contain any of the available hatch patterns.

Your drawings for the three wall definitions are finished. You need to create template directories where you can save these three walls as symbols.

➔ To select template directories for the new wall definitions:

1. Press T for the Template menu. Choose New Path, <ROOT>, DCAD_LLC, DCADPLUS, ScrlFwrd, TPL, ScrlFwrd, ScrlFwrd, and ZAC. This establishes the directory path for the templates.
2. Click the right mouse button and select ScrlFwrd. Choose WALL_1. This establishes the template file where you will store the first drawing.
3. Select New File and click on WALL_2. This establishes the template file for the second wall you created.
4. Select New File and click on WALL_3 for the last one. This establishes the template file where DataCAD Plus will store the third drawing.



Wall 1 Wall 2 Wall 3

Each of the template files you selected will contain one of your wall drawings as a symbol. The AutoPath option will help you save the symbols properly.

➔ To save each drawing as a symbol in a template file:

1. Press T to go to the Template menu, open the file WALL_1, and select SaveSymb.
2. Make sure AutoPath is activated. Enter an eight-character name for the symbol following the prompt "Enter name of the symbol file to be saved." Type the name WE_BR_01 and press Enter.
3. Activate Area. In response to the prompt "Select first corner of area to <CREATE SYMBOL>," click near a corner of the first drawing and expand the rubberband to surround that wall. Click again when the rubberband surrounds all of your first wall but nothing else on your screen. The details of your drawing disappear, leaving a dashed-line box. The prompt "Select a reference point for symbol" appears.
4. Snap with the middle mouse button (or the N key) to the bottom right corner of the dashed-line box. Your wall drawing now appears in the symbols shown at the right side of your screen.
5. Right-click until the Template menu appears.
6. Select NewFile, click ScrlFwd , choose WALL_2, and select Save Symb. Follow steps 2 through 5, but use the name WE_BR_02 for the symbol file.
7. Select NewFile, click ScrlFwd, choose WALL_3, and select Save Symb. Follow steps 2 through 5, but use the name WE_BR_03 for the symbol file. Continue right-clicking until you get to the Edit menu.

The symbol path names are automatically set as follows:

Symbol 1	SYM\ZAC\WALL_1\WE_BR_01
Symbol 2	SYM\ZAC\WALL_2\WE_BR_01
Symbol 3	SYM\ZAC\WALL_3\WE_BR_01

Now that you have saved each wall as a symbol, you are ready to add a new record to the database file. This will complete your new wall definition.

➔ To add a record of the new wall definition to the database:

1. Follow the instructions for adding a simple new wall record to the database.
2. Make the following changes to the fields:

Element	Enter WE_BR_01 (Wall External, Brickwork, 1 Foot).
Definition	Enter F for fixed overall thickness.
Wallthk	Enter 0.305. This is the value in meters for the 1-foot thick wall. If you are not sure of the metric equivalent for the wall, temporarily change the scale type in DataCAD Plus to meters and measure the overall thickness. (In the Utility menu, select Settings, ScaleTyp, and Meters.)

Symbol_2D	Enter SYM\ZAC\WALL_1\WE_BR_01. This is the path where the symbol was saved with the specific symbol name. Using the subfolder WALL_1 tells ZAC to use the simplest of the three wall definition symbols as a default.
Hatch	Leave this blank because the hatch definition is based on the symbol definition.
Factor (for hatch scale)	No longer required; the factor is based on the symbol definition

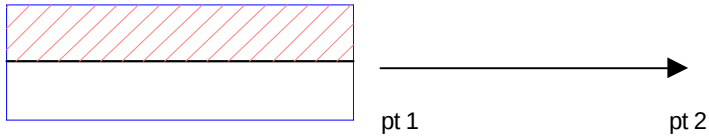
3. Select Ok to add the database record.

You have now successfully added a complex wall database component.

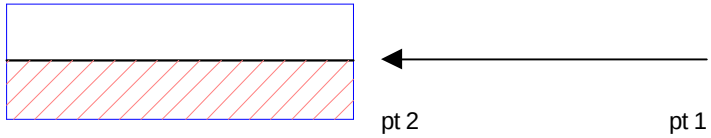
Using the Complex Wall in Your ZAC Drawing

You can now select this wall database component and use it in your drawing. If you need to make any changes to the database record, highlight the record, select the Edit icon, make the changes, and click on OK to save them.

When drawing the wall with the selected complex database component, remember the direction in which you draw the ZAC walls. Picking the first and second points of the wall sequence determines the direction in which the symbol is used for the ZAC wall. Therefore, drawing a ZAC wall in a clockwise direction using the previous symbol definition will result in this display:



Drawing the wall in a counter-clockwise direction will result in this display:



If you need to change the orientation of the wall definition after you complete your drawing, press Alt + F to go to the CleanUp menu, choose DefOuter, and click on the outer side of the wall. DataCAD Plus reorients the wall definition.

Before you start the Gen_2D process, you can use the wall definitions that contain a higher level of detail in the ARCHTECT menu to generate 2D documentation. To do this, select ARCHTECT, Gen_2D, and Detail. The Z_DETAIL database appears. Choose a medium or high level of detail and select Ok to confirm.

Adding New Windows or Doors to the ZAC Database

What if you cannot find the right window or door in the ZAC database? You can create your own and add these windows or doors to the ZAC database. Then, you can use them repeatedly in your ZAC drawings.

➔ To add windows or doors to your ZAC database, you must:

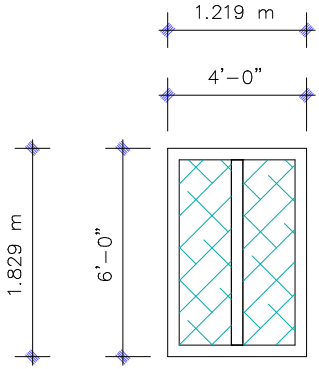
1. Create the 3D window and/or door components. This involves using a DataCAD Plus macro or drawing 3D slabs and polygons for the window or door by yourself.
2. Create the 2D versions of the window and/or door using DataCAD Plus.
3. Dimension the window or door in meters. The ZAC database only accepts input in meters. If you created the window or door using inches and feet, you must change the ScaleTyp (in the Settings menu) to Meters.
4. Save the drawing of these components as symbols. The drawing must be placed as a symbol into a template file so the ZAC database will know where to find it.
5. Add the new window or door to the ZAC database. This allows you to use it in future ZAC drawing projects.

Creating the 3D Window or Door Components

There are several methods for creating a window or door with DataCAD Plus:

- Use the AEC_Modl macro, Window, to define and produce a window
- Use the AEC_Modl macro, Door, to define and produce a door
- Use the SWINDOW macro to define and produce a window
- Use an existing 3D window from the WIN_3D template file that you can explode, modify, and save as a new window
- Use an existing 3D door from the DOR_3D template file that you can explode, modify, and save as a new door
- Draw your own window or door

Each of these methods is described in the *DataCAD Plus Reference Manual*. Using a macro to create a window or door is much simpler than drawing one from scratch.



Regular-shaped rectangular window

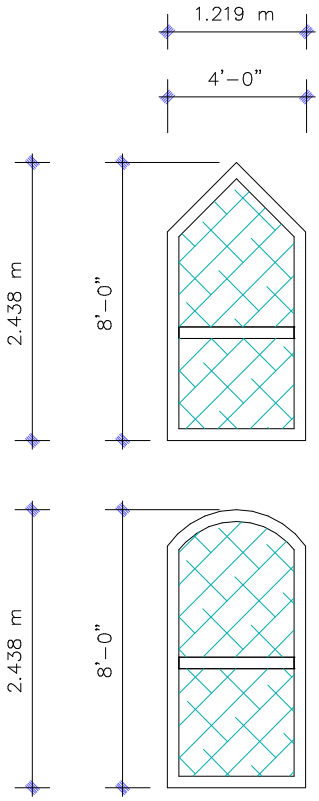
This was drawn with DataCAD Plus 3DEntity and Slab.

You can draw it using imperial measurements. Dimensions must be changed to meters for inclusion in the ZAC database.

➔ To draw your own regular-shaped 3D window or door (such as a square or rectangle):

1. Use DataCAD Plus 3DEntity.
2. Select Slab.
3. Choose RectAngl.
4. Select Thicknss, supply the value in the input field, and press Enter.
5. Use Base+Thk to draw the slab by stretching the rubberband.
6. Draw rectangular slabs where you want to insert glass. Right-click to return to the Slab menu.
7. Select Voids and click on the master slab.
8. Choose Entity and AddVoids; click on each rectangular slab where you want to leave an opening for the glass.
9. Use 3DEntity Polygon or Slab to produce the glass within the openings.

See the *DataCAD Plus Reference Manual* for information about working with 3D polygons, slabs, and voids.



Irregular-shaped window with an angular top

This was drawn with DataCAD Plus 3DEntity and Slab.

You can draw the window using imperial measurements. Dimensions must be changed to meters for inclusion in the ZAC database.

Irregular-shaped window with a circular top

This was drawn with DataCAD Plus 3DEntity and Slab. The curved shape was obtained by using multiple slab points.

You can draw the window using imperial measurements. Dimensions must be changed to meters for inclusion in the ZAC database.

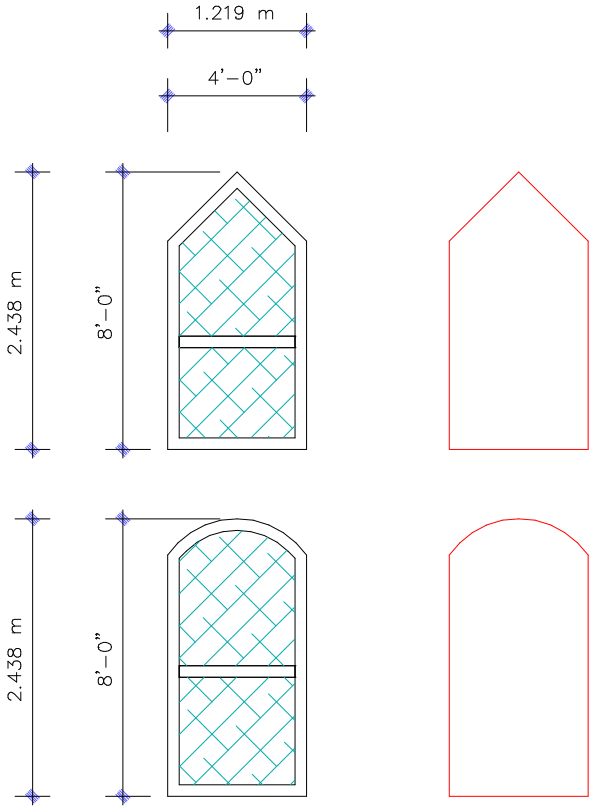
➔ To draw an irregular-shaped 3D window or door with an angular top:

1. Use DataCAD Plus 3DEntity.
2. Draw the angular window using Slab, Horizntl, Thicknss, and Base+Thk.
3. Create a void where the glass should appear.
4. Produce the glass.

➔ To draw an irregular-shaped 3D window or door with a curved top:

1. Use DataCAD Plus 3DEntity and Slab to create the shape of the window or door. Use multiple points to define the curved portion. You are limited to a maximum of 36 points.
2. Create a void where the glass should appear.
3. Produce the glass.

For irregular-shaped windows with either an angular or curved top, you also need to create a 3D horizontal polygon of the outer perimeter of the window for the void that ZAC must generate.



Outer perimeter shape

Create a 3D horizontal polygon of the perimeter of the irregular-shaped window or door for the void that ZAC must generate.

➔ To create the outer perimeter shape of the window with the angular top:

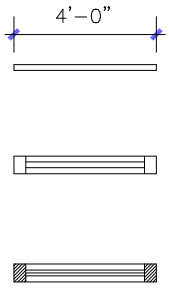
1. Select Polygon from the 3DEntity menu.
2. Choose Horizntl.
3. Activate Z-Base.
4. Click at each corner of the polygon and right-click to end it.

➔ To create the outer perimeter shape of the window with the curved top:

1. Create a horizontal polygon for the shape of the window by following steps 1 through 4 of the preceding instructions.

Creating 2D Components for the 2D Plan

In addition to the 3D components, you also need to create three separate 2D components. These will represent the 2D plan display of the window or door at various levels of detail.



➔ To create 2D components:

1. Deactivate W on the switch bar. This allows you to draw 2D lines instead of walls.
2. Use 2D lines to draw three different versions of the window or door 2D components. Each version should show slightly more details than the preceding one.
3. Use H for the Hatch menu and apply patterns where needed in the detailed drawing.

If various windows or doors are the same width (as in this example) and have the same plan representation, they can all refer to the same 2D components in the database.

Dimensioning the Window or Door

Whether you use a macro to fashion the window or door or draw your own from scratch, you must dimension it. The ZAC database works with meters only, not inches. If your window or door was created with imperial (inches and feet) measurements, you must change them to metric before you can dimension it.

➔ To dimension the window or door:

1. Select Settings from the UTILITY menu.
2. Choose ScaleTyp.
3. Select Meters.
4. Right-click to return to the UTILITY menu and select Dimension.

5. Dimension the width and height of the 3D window or door.
6. Dimension the 2D window or door.

Once the dimensions are in meters, ZAC can use this information in the database.

Saving the Window or Door Components as Symbols

Once you have created all the components necessary for both the 2D and 3D representation, you must save all of them as symbols to the correct folders so the database will be able to find them.

➔ To access the correct template files where these components will be stored:

1. Press [T] to go to the Template menu.
2. Select NewPath. Using ScrlFwrd where necessary, navigate through these folders and files: <ROOT>, DCAD_LLC, DCADPLUS, TPL, and ZAC.

In some places, you may need to use ScrlFwrd until you find the particular folder.

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3. Right-click the mouse and select WIN_3D for windows. (If you are working with doors, select DOR_3D instead.) The template for windows appears.

TPL\ZAC\WIN_3D

➔ To add more space in the template window to hold your new symbols:

1. Select Divisons from the Template menu. The prompt requests "Number of X-divisions in template."
2. Press Enter to accept what is already there. The prompt requests "Number of Y-divisions in template."
3. Type the number 20 in the input box and press Enter. This will add an extra row of template windows where you can place your new symbols.

➔ To save the first 3D symbol:

1. Select SaveSymb from the Template menu.
2. Activate AutoPath in the SaveSymb menu so the symbols will be saved to the correct folder. The prompt requests "Enter name of the symbol file to be saved."
3. Type a name with no more than eight characters (for this example, type the name WIN-T1) and press Enter.
4. Activate Area. The prompt requests "Select first corner of area to <CREATE SYMBOL>."
5. Stretch the rubberband around the window (by clicking just beneath the lower left corner and moving above the upper right corner) and click when you have enclosed it. This selects the window you created. The prompt requests "Select a reference point for symbol."
6. Snap to the lower left corner of the window by clicking your middle mouse button or pressing N. (See the following illustration.) This immediately pops your window into the WIN_3D template. The prompt requests "Item name."
7. Type the window symbol's name (in this example, WIN-T1) and press Enter.

Make a note of the folder and the symbol name (in this example, it is SYM\ZAC\WIN_3D\WIN-TI) for future reference.

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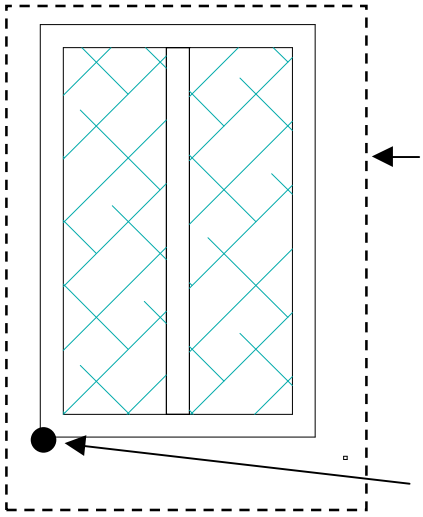
8. Right-click twice to close the operation.

Follow steps 1 through 8 to save the other two windows as WIN-T2 and WIN-T3.



Saving Irregular-shaped 3D Polygon Voids as Symbols

Before ZAC can place the irregular-shaped window or door you created into your drawing, there must be a matching void for it. The 3D polygon you created represents that void. You must save the 3D polygon to the correct template file so that ZAC can use it to create a void where the irregular-shaped window or door will be placed.

➔ To save an irregular-shaped 3D polygon void as a symbol:

1. Press T for the Template menu.
2. Select NewFile and use ScrlFwrd until you find the WIN_VOID file.
3. Choose WIN_VOID. This file contains the 3D polygons ZAC uses to create voids.

If necessary, you can add more template windows by selecting Divisons and changing the number of X or Y divisions. (See the instructions in the previous section.)

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4. Select SaveSymb, type the symbol name (in this example, WIN-T2) in the input box, and press Enter.
5. Activate Area, stretch the rubberband around the void (by clicking just beneath the lower left corner and moving above the upper right corner), and click when you have enclosed it. This selects the void you created. The prompt requests "Select a reference point for symbol."

6. Snap to the lower left corner of the void by clicking your middle mouse button or pressing N. (See the following illustration.) This immediately pops your 3D polygon void into the WIN_VOID template. The prompt requests "Item name."
7. Type the void symbol's name (in this example, WIN-T2) and press Enter.

Make a note of the folder and the symbol name (in this example, it is SYM\ZAC\WIN_VOID\WIN-T2) for future reference.

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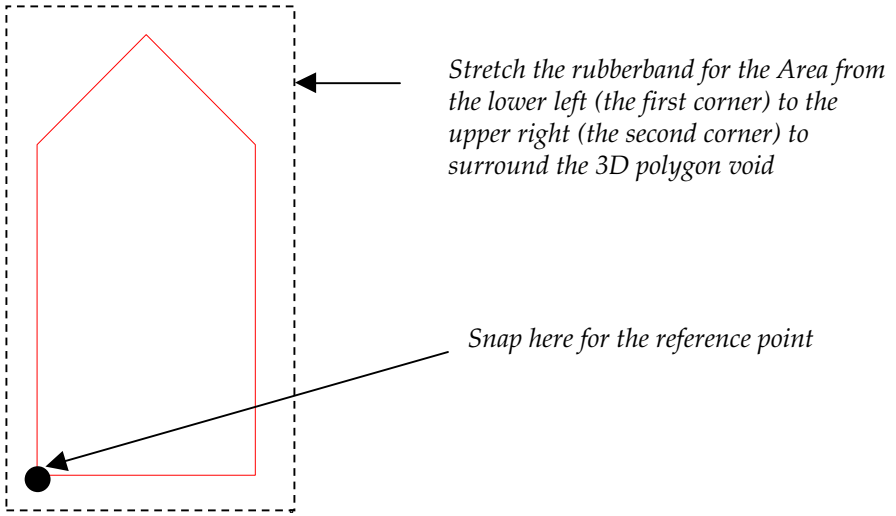
8. Right-click twice to close the operation.

Follow steps 1 through 8 to save the 3D polygon void for another window. In this example, you would save the third window's 3D polygon void as WIN-T3 in the WIN_VOID template.



Saving the 2D Window or Door Components as Symbols

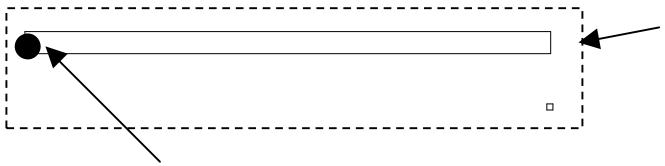
You must also save the 2D window or door components (which you created earlier in this example for three levels of detail) as symbols. Each one must be placed in the appropriate template much like the 3D windows or doors.

➔ To save the simplest of the 2D window components as a symbol:

1. Press T to reach the Template menu.
2. Select NewFile and use ScrlFwrd until you find the WIN_2D_1 file.
3. Choose WIN_2D_1. This file contains the most basic 2D representations.

If necessary, you can add more template windows by selecting Divisons and changing the number of X or Y divisions. (See the instructions in a previous section.)

4. Select SaveSymb, type the symbol name (in this example, PLAN-4) in the input box, and press Enter.
5. Activate Area, stretch the rubberband around the first 2D plan (by clicking just beneath the lower left corner and moving above the upper right corner), and click when you have enclosed it. This selects the simplest 2D plan you created. The prompt requests "Select a reference point for symbol."
6. Snap to the middle left edge of the 2D plan by clicking your middle mouse button or pressing N. (See the following illustration.) This immediately pops your 2D plan into the WIN_2D_1 template. The prompt requests "Item name."



Stretch the rubberband for the Area from the lower left (the first corner) to the upper right (the second corner) to surround the 2D plan

Snap to the middle left edge for reference point

7. Type the void symbol's name (in this example, PLAN-4) and press Enter.

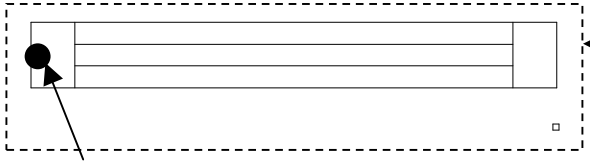
Make a note of the folder and the symbol name (in this example, it is SYM\ZAC\WIN_2D_1\PLAN-4) for future reference.

8. Right-click twice to close the operation.

You must now save the next two levels of the 2D plan of the window components. In each case, you will follow steps 1 through 8, but change the name of the template file. The Item name is PLAN-4 for all levels of the 2D plan of the window components.

Middle level of the 2D window components:

Template file	WIN_2D_2
Item name	PLAN-4
Folder and symbol name	SYM\ZAC\WIN_2D_2\PLAN-4

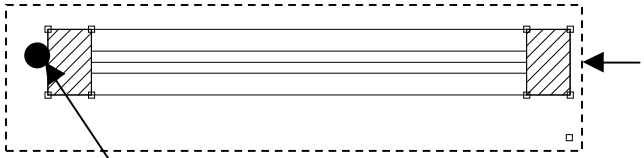


Stretch the rubberband for the Area from the lower left (the first corner) to the upper right (the second corner) to surround the 2D plan

Snap to the middle left edge for reference point

Most complex level of the 2D window components:

Template file	SYM\ZAC\WIN_2D_3
Item name	PLAN-4
Folder and symbol name	SYM\ZAC\WIN_2D_3\PLAN-4



Stretch the rubberband for the Area from the lower left (the first corner) to the upper right (the second corner) to surround the 2D plan

Snap to the middle left edge for reference point

Adding the New Window or Door Components to the ZAC Database

After adding the window or door components you created to the template files as symbols, you must add them to either an existing or new database.

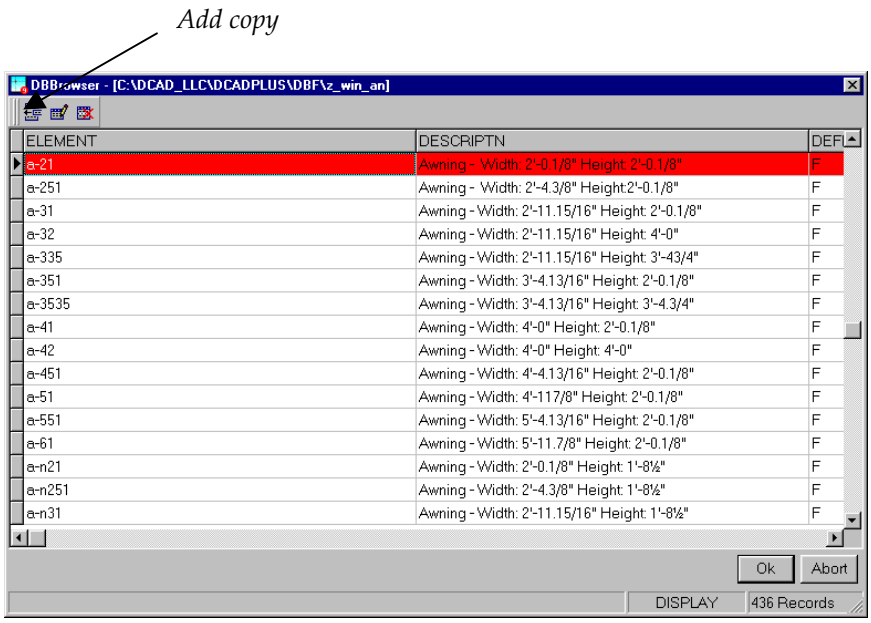
➔ To create a new database:

1. Click on the Windows Start button in the lower left corner of your screen.
2. Select Programs and click on Windows Explorer.
3. Open the folders for DCAD_LLC, DCADplus, and DBF.
4. Highlight either the Z_WIN_AN.DBF (windows database) or Z_DOR_AN.DBF (doors database) file.
5. Click on the Copy icon (or select Copy from the Edit pull-down menu.
6. Scroll to the bottom of the list of files in the DBF folder. There you will find a file labelled Copy of Z_WIN_AN.DBF (for windows) or Copy of Z_DOR_AN. DBF (for doors).
7. Select Rename from the File pull-down menu. Copy of Z_WIN_AN.DBF (or Copy of Z_DOR_AN.DBF) is highlighted in a rectangular box.
8. Type an eight-character file name and the file extension ".DBF" (remember that a period or dot precedes DBF) and press Enter. For example, you could use ZMYWINS.DBF or ZMYDOORS.DBF as the file name.

➔ To add the new windows or doors to a database file:

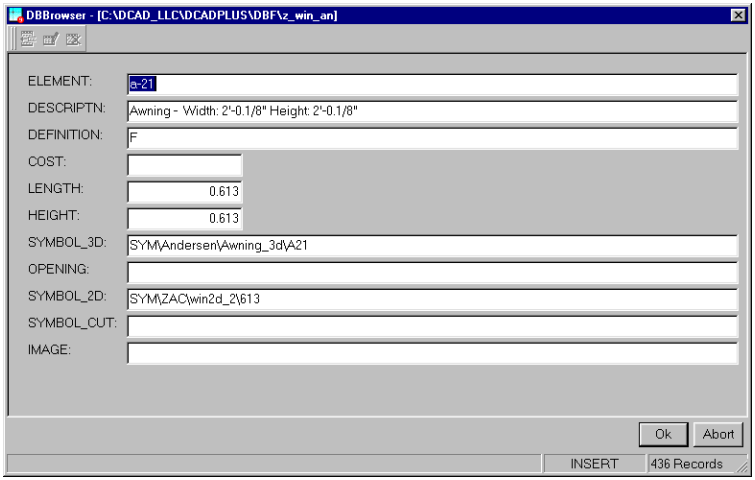
1. Activate the ZAC and W buttons on the DataCAD Plus switch bar.
2. Select ARCHTECT from the EDIT menu.
3. Choose Openings.
4. Click on Window to work with the new windows or Door to work with new doors.
5. Press Backspace to load the Z_WIN_AN.DBF (for windows) or Z_DORS_AN.DBF (for doors) database. The database appears.

If you created your own database or want to save the new windows or doors to a different database, press Alt+Backspace, choose dBase, and select the database you want to load.



6. Select any existing database item and choose the Add icon. The database entry screen for that item (known as an Element) appears.

It doesn't matter which database item you select. The item you select serves as a pattern for a new database window or door element. This new element will not replace the one currently on your screen. The new element (window or door) will be added to the database so that you can use it in drawings.



7. Type the information about your new window or door into the database entry fields. Press Tab to move from one entry field to the next. When you are finished, click on the OK button.

Based on the example where you created the new windows, the information in the database fields for the rectangular one would be:

ELEMENT	WIN-T1
DESCRIPTN	Rect Window 4'-0 x 6'-0
DEFINITION	F
COST	0
LENGTH	1.219
HEIGHT	1.829
SYMBOL_3D	SYM\ZAC\WIN_3D\WIN-T1
OPENING	
SYMBOL_2D	SYM\ZAC\WIN_2D_1\PLAN-4
SYM_CUT	

In the DEFINITION field for a window, F indicates a fixed window and no entry (blank) signifies a freely defined window. In the DEFINITION field for a door, F indicates a fixed single door, FD is used for a fixed double door, and no entry (blank) signifies a freely defined door.

For the rectangular window, no entry is needed in the OPENING field since this symbol has rectangular proportions.

If we had created a symbol for a cut section, that would be entered in the SYM_CUT (section detail) field. The SYM_CUT information is used when ZAC generates a section.

8. Repeat steps 6 and 7 for each additional window or door you want to add to the database. When you are finished entering new items to the database, click on Ok to return to the ZAC drawing window.

Based on the example where you created the new windows, the information in the database fields for the irregular-shaped ones would be:

ELEMENT	WIN-T2	WIN-T3
DESCRIPTN	Rect Window 4′-0 x 8′-0	Rect Window 4′-0 x 8′-0
	with Angular top	with Curved top
DEFINITION	F	F
COST	0	0
LENGTH	1.219	1.219
HEIGHT	2.438	2.438
SYMBOL_3D	SYM\ZAC\WIN_3D\WIN-T2	SYM\ZAC\WIN_3D\WIN-T3
OPENING	SYM\ZAC\WIN_VOID\WIN-T2	SYM\ZAC\WIN_VOID\WIN-T3
SYMBOL_2D	SYM\ZAC\WIN_2D_1\PLAN-4	SYM\ZAC\WIN_2D_1\PLAN-4
SYM_CUT		

Since you created polygons for the irregular-shaped openings for these two windows, you must add that information to the database in the OPENING field.

Using the New 3D Windows or Doors in ZAC Drawings

Now that the windows or doors you created (either from scratch or with a macro) are in the database, you can use them in your ZAC drawings.

➔ To use the new windows or doors that you added to the database:

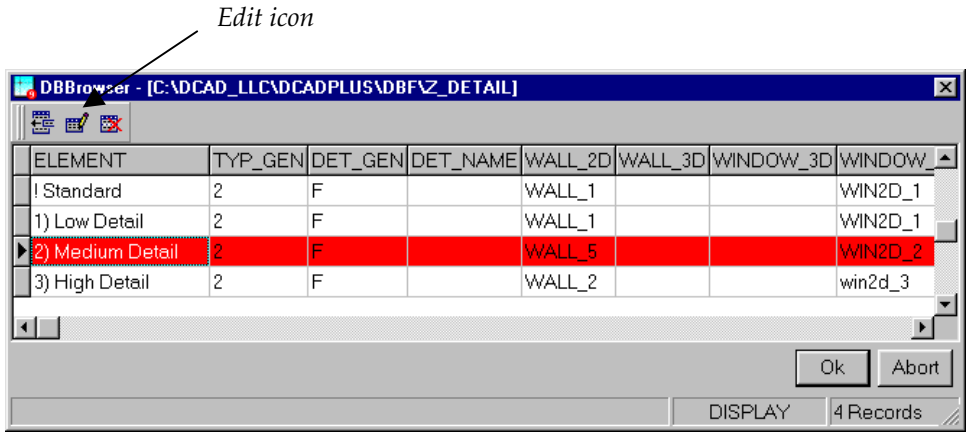
1. Activate ZAC and W in the Switch bar and select ARCHTECT from the UTILITY menu. The ZAC icon bar appears.
2. Use the Wall icon to draw walls.
3. Click on the Create Windows or the Create Doors icon.
4. Press Backspace to open the windows or doors database. The database appears.
5. Highlight one of the windows or doors you created and click on Ok. You return to the drawing screen.
6. Insert the new window or door into the wall.

Generating the 2D Plan with the New Windows or Doors

When you created the 3D windows in the exercise, you also designed their 2D representations in three levels of detail. In addition, you saved these 2D representations as symbols and included them in the database for each window. These will be used to generate the 2D plan.

➔ To make sure you use the new window or door in the 2D plan:

1. Activate ZAC and W in the Switch bar and select ARCHTECT from the Utility menu. The ZAC icon bar appears.
2. Choose Gen_2D from the ARCHTECT menu.
3. Select Detail from the Gen_2D menu. The Z_DETAIL.DBF database appears.
4. Click on the Edit icon.



5. Make sure that the correct folders are associated for each level of detail in the fields for Window_2D and Door_2D. These are:

	Window_2D	Door_2D
Standard	WIN_2D_1	DOR_2D_1
Low Detail	WIN_2D_1	DOR_2D_1
Medium Detail	WIN_2D_2	DOR_2D_2
High Detail	WIN_2D_3	DOR_2D_3

   If necessary, make changes.

6. Select Ok to return to the database.
7. Choose the level of detail you want to use in your 2D plan and click on Ok to generate it.

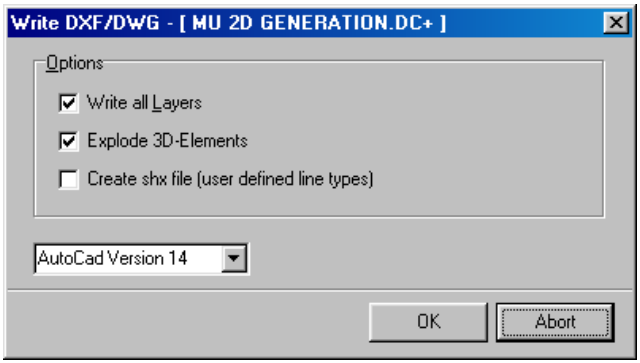
Exporting ZAC Drawings

You can export and import both DXF and DWG files compatible with AutoCAD releases 12, 13, and 14.

See DXF/DWG Translator in the Appendix of the *DataCAD Plus Reference Manual* for more information about entity translation.

➔ To export a DataCAD Plus (.DC+) File to DXF or DWG:

1. Choose Export from the File pull-down menu and select to DXF/DWG file… The Save As screen appears.
2. Type a name in the File name input box. Select the destination folder or drive by using the drop-down list, the Up One Level icon, or the Create New Folder icon.
3. Select a file type (DWG or DXF) from the Save as type drop-down list.
4. Press Enter or click on Save. The Write DXF/DWG dialog box appears.



5. Check the appropriate Options.

- Write all Layers – Check this box to export all layers in the current file. If this box is unchecked, only the layers that are on will be exported.
- Explode 3D-Elements - This box is unchecked (off) by default. Any 3D entity in a DataCAD PLUS (.DC+) file will be translated as a polyface mesh when exported to a DXF or DWG file; this polyface mesh is a single entity. If you check this box, each facet of a 3D entity will be turned into an individual polyface. Therefore, a single sphere in DataCAD can be translated into many separate entities arranged in a sphere shape in a DWG file. Checking this option can speed up translation and allow the translated entities to look the same after a shade or hidden line removal. If you check this box, editing may be more difficult since these translated 3D entities are made up of many smaller, separate entities.

- Create shx file (user defined line types) - During export, the line definitions and shape codes for DataCAD Plus linetypes are stored in a .SHX file. Check this box to create the SHX file.

If you export a DataCAD Plus drawing named MYDRAWING.DC+, the translator will create two files: MYDRAWING.DWG and MYDRAWING.SHX. To display the linetypes in the DWG file properly, you must place the .SHX file in the \SUPPORT subdirectory in the AutoCAD directory.

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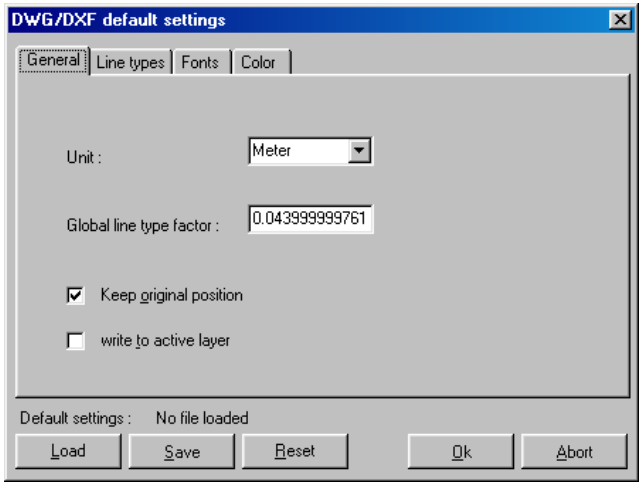
6. Select the appropriate version from the drop-down list. You can export your DXF/DWG file to AutoCad versions 12, 13, or 14.

If the filename you entered in step 2 already exists, a dialog box will appear. This will let you overwrite (replace) the existing file. Also, if the DWG/DXF file you're attempting to overwrite is open, a message tells you that the file is currently in use. To cancel the translation, select End.

➔ To import a DXF or DWG file:

1. Select Import from the File pull-down menu. Choose from DXF/DWG file… The Open dialog box appears.
2. Indicate which folder or drive contains the file you want to import by using the drop-down Look in box or the Up One Level icon..
3. Select the AutoCad file extension (DWG or DXF) you wish to import in the Files of Type drop-down box. A list of files with that extension appears.
4. Select a file from the list or type the name of the file to import in the File name input field. Select Open or press Enter. The DWG/DXF default settings dialog box appears.



This dialog box allows you to set the unit and global line type factor. The other tabs determine how DataCAD Plus will translate linetypes, hatch patterns, fonts, and colors. Use the Save button to save the settings in this dialog to the .DFG file. If you select Load, you can use previous .DFG file settings. The Default settings file currently loaded is displayed above the Save and Load buttons.

5. Make decisions about linetypes, hatches, fonts, and colors on the other tabs in this dialog box:

- Line types - lists each AutoCAD linetype used in the file and suggests a DataCAD equivalent. Select the linetype you want to change. Immediately below the Assignment list box, your selection is reproduced, with the translation linetype in a drop-down box. Choose a new linetype from the drop-down box. Your selection appears in the list box.
- Hatches – includes a hatch factor setting in the lower right corner of this tab. This setting is the scale of the DataCAD Plus hatch as compared to the AutoCad one. For instance, the translator maps AutoCad's Brick hatch pattern to the DataCAD Plus Brick pattern at 0.75 scale. So the DataCAD Plus Brick pattern must be scaled to 75% of its full size to match AutoCad's hatch size. To change this scale, press Tab until you reach the Factor input field or click in that box. Type a new value.
- Fonts – displays fonts that will apply to text in the imported file. Highlight the selection you want to change in the list box. Select the new font designation from the drop-down list. The new font appears in the list box.
- Color - allows you to assign a DataCAD Plus color to an equivalent AutoCAD one. This way, you can properly translate DataCAD Plus colors when you import or export from a DWG/DXF file.

The DataCAD Plus color definition list is different from AutoCad's. For instance, in DataCAD Plus, Color 1 = White, Color 2 = Red, Color 3 = Green, etc. While we see white, red, and green colors on screen, DataCAD Plus recognizes these only as Color 1, Color 2, and Color 3, respectively. AutoCAD works similarly, except it displays Colors 1, 2, and 3 as red, yellow, and green, respectively. So if you don't use the Color Translation table when you export a DataCAD Plus file, the resulting DWG/DXF file will only associate "Color 1", "Color 2", etc., with each entity. When the file is displayed in AutoCAD, the program recognizes "Color 1" and displays the entity as red, instead of white as it was drawn in DataCAD Plus. The Color Translation table corrects for this, allowing white entities in DataCAD Plus to display as white when exported to a DXG/DXF file and vice versa.

6. Click on OK to begin importing the file. The Confirm dialog box appear.

7. Select Yes. Supply a file name in the Save As dialog box and select Save or press Enter. A progress report appears in the Message Window. Or click Cancel to stop the import and close the dialog box. The Translator can also be minimized during translation.

Using PlotManager for Multiscale Plotting

ZAC uses PlotManager, a DataCAD Plus utility, to plot drawings with predefined plot frames and title blocks. You can use it to plot multi-scale drawings (each with its own pen definitions) on a single sheet of paper. PlotManager can automatically rescale text and dimensions for each plot scale you select to keep the size of text and dimensions uniform throughout. You can save each plotting sheet to an external file and recall it at any stage.

➔ To use PlotManager involves the following steps:

1. Prepare the drawing.
2. Set parameters for the sheet of paper.
3. Work with borders, title block, and cut marks.
4. Lay out the drawing on the plot sheet.
5. Position detail boxes on the plot sheet.
6. Make changes to the plot if necessary.
7. Save the layout sheet.

Preparing the Drawing

➔ To prepare the drawing you want to plot:

1. Press L to reach the Layers menu.
2. Select AllOn and choose Yes to turn on all layers of your drawing. Alternatively, select ON/OFF to select the ones you want. Normally, you would turn on the layers for walls, windows, doors, hatching, text, and dimensions.
3. Make sure ortho mode is active. The O button on the Switch bar should be active.

You can only lay out drawings in ortho mode.

➔ To lay out 3D views on the sheet:

1. Save each 3D view to a separate layer as a 2D image.
2. Press L and activate that layer prior to laying out the views.
3. Make sure ortho mode is active.

Setting Parameters for the Sheet of Paper

➔ To set up the standard DataCAD Plus plotter for a sheet:

1. Press Alt+P to display the Plotter menu. A plot sheet also appears.
2. Select Scale to display the Factor menu.
3. Choose the scale for this sheet. The scale must be large enough to accommodate all the drawings you want to lay out on this single sheet. (*Example: scale of 1/8″*).
4. Right-click to return to the Plotter menu.
5. Select PaperSiz.
6. Activate the measurement type for the paper by selecting INCH for Imperial or one of the DIN alternatives (A, B, or C) for meters.
7. Select the paper size from the alternatives offered in the middle portion of the PaperSiz menu. Right-click to exit the PaperSiz menu. The cursor changes to represent the sheet of paper.

If you cannot find the paper size you want to use in the alternatives in the middle of the menu, choose FreeDef to define your own custom size.

If the paper sheet cursor disappears, right-click once to get it back

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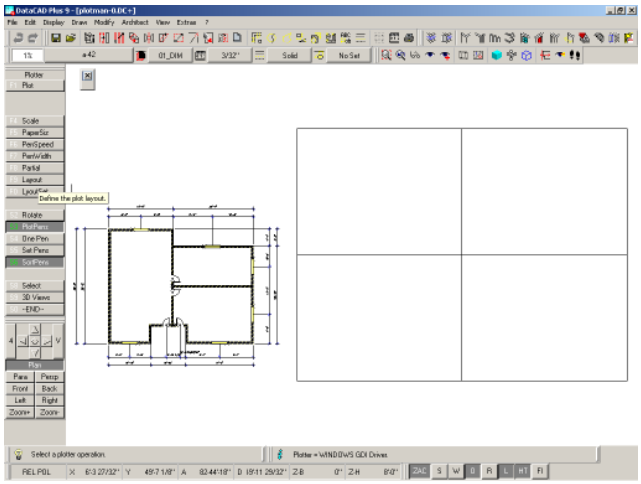
8. Move the sheet with your mouse until it is positioned next to (or beside) the drawing, not over it. Click once to place the sheet of paper.

Use the arrow keys to pan and PgUp or PgDn to zoom in or out before placing the layout sheet.

Example:

1. *Press Alt+P to display the Plotter menu.*
2. *Choose Scale and select 1/8″.*
3. *Make sure ortho mode is activated (O on the Switch bar should be depressed).*
4. *Select PaperSiz.*
5. *Activate INCH, select 8.5x11A, and right-click to exit the PaperSiz menu. The cursor changes to represent the sheet of paper.*
6. *Move the sheet with your mouse until it is positioned next to (or beside) the drawing, not over it. Click once to place the sheet of paper.*



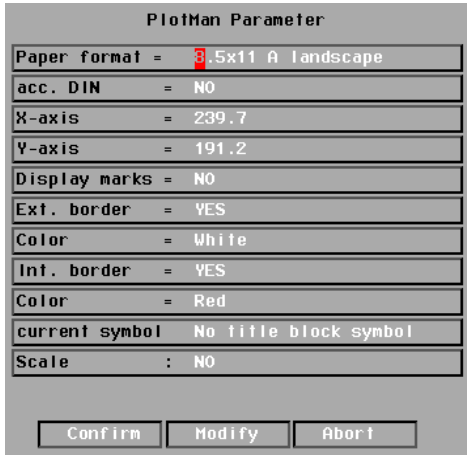
If your plot sheet disappears because you inadvertently pressed another key or selected the wrong menu button, press Alt+P to display it again.

Working with Borders, Title Block, and Cut Marks

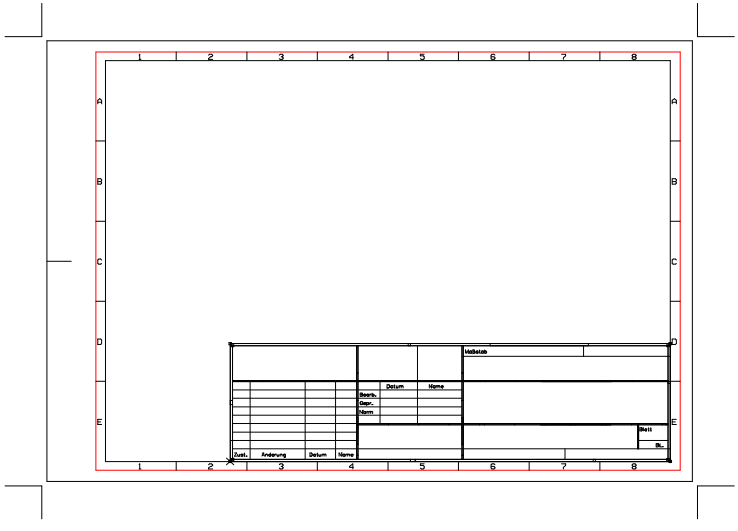
Besides your drawing, you can add borders, a title block, and cut marks to your plot sheet. PlotManager helps you set these parameters either by accepting defaults or specifying your own measurements and colors. You can control your plot by modifying the parameters with the PlotManager macro.

➔ To modify the PlotManager parameters for your plot sheet:

1. Press Shift+M for the Macro menu, use ScrlFwrd, and select the PlotManager macro (abbreviated as PLOTMAN). The PltFrame menu appears. This is the main PlotManager menu.
2. Select Frame. The PlotManager Parameter dialog box appears.



3. Click on Modify to change the frame parameters. The DefPlot menu appears.
4. Make changes based on the options in the DefPlot menu. These options are described further in the Borders, Title Block, and Cut Marks sections.
5. Right-click to exit the DefPlot menu once you have finished making changes. The PlotManager Parameter dialog box reappears, displaying the settings you selected in the DefPlot menu
6. Select Confirm when you are satisfied with your settings for the plot. If necessary, select Modify to return to the DefPlot menu to change settings. The layout sheet (complete with borders, title block, and cut marks) appears next to your drawing on the screen.
7. Select End or right-click to exit the DefPlot menu. The PltFrame menu appears.



Borders

There are several variables you can control to make the plot borders meet your firm's requirements. You can set the distance between the border and the paper's edges, control the distance between the borders, specify different colors for internal and external borders, and generate border scales.

➔ To set the distance between the border and the edges of the paper:

1. Activate BordDist, You are prompted to "Enter distance from page frame \in mm\."

Most plotters and/or printers cannot print up to the edge of the paper. Check your plotter's documentation to determine how much space is needed between the paper's edge and the external border. Many laser printers require a minimum of 0.25" or 6.35 mm nonprinting area.

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2. Type a value and press Enter.

Normally, the left border is wider than the right to allow for binding and filing; however, you can use Mirror to make the right border the wider one.

➔ To make the right border of the layout sheet wider than the left:

1. Select Mirror from the DefPlot menu.

You can either define distances between internal and external borders on your own or use default DIN values. These distances mustt be set in millimeters, not inches.

➔ To use DIN values to define distances between internal and external borders:

1. Activate DIN on the DefPlot menu. This sets a 5mm distance for the bottom, top, and right borders; the left border distance is set at 20mm.

➔ To define distances between internal and external borders on your own:

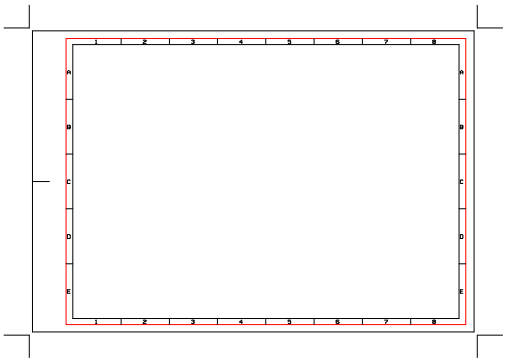
1. Make sure DIN is not active. Buttons for Left, Right, Top, and Bottom border distances appear on the DefPlot menu.
2. Select Left. You are prompted to "Enter left page frame width \in mm\."
3. Type a value and press Enter.
4. Set the Right, Top, and Bottom distances by repeating steps 2 and 3.

➔ To create a colored border on the sheet:

1. Activate ExtBord on the DefPlot menu, select ExtColor, and choose an external border color.

2. Activate IntBord, select IntColor, and choose a color for the internal border for the plot sheet.

➔ To generate a border scale (see the following illustration):



1. Select Scale from the DefPlot menu.
2. Choose X-Divs, type a value for the number of partitions you want on the horizontal borders, and press Enter. Numbers represent these divisions.
3. Choose Y-Divs, type a value for the number of partitions you want on the vertical borders, and press Enter. Letters represent these divisions.
4. Toggle X-Right on if you want numbers to increase from left to right; toggle X-Right off if you want them to increase from right to left.
5. Toggle Y-Bottom on if you want letters to go from bottom to top; toggle Y-Bottom off if you want them to go from top to bottom.
6. Select Spacing, input a value to define the distance from the outer border to the inner border, and press Enter.
7. Right-click to return to the DefPlot menu.

Title Block

➔ To place a title block on your plot sheet:

1. Select Symbol from the DefPlot menu.

By default PlotManager looks in the DCAD_LLC\DCADPLUS\SYM\TTL_BLK folder for symbols.

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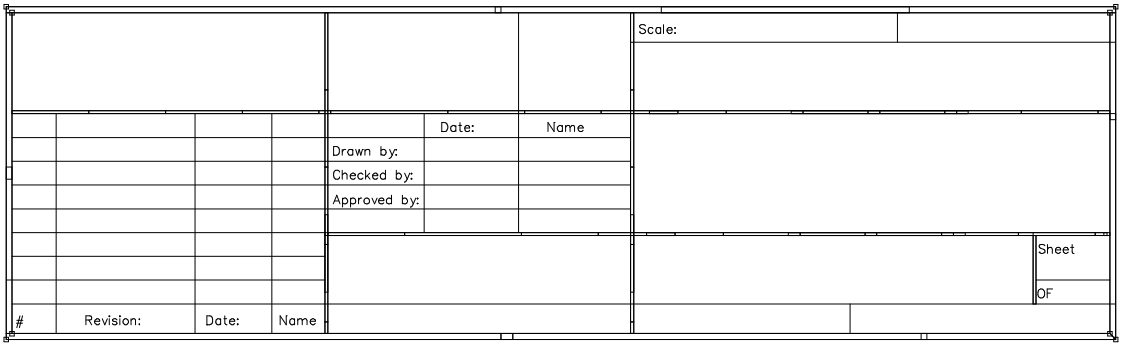
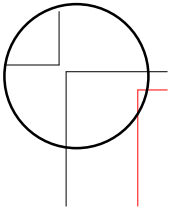
2. Change the path where PlotManager looks for these symbols by selecting New Path, Root, DCAD_LLC, DCADPLUS, SYM, TTL_BLK. (Use ScrlFwrd where necessary). Press Enter or right-click when the path is correct.
3. Select the symbol (*in this example, BFELD1, shown in the following illustration*). It will be inserted in the lower right corner of the layout sheet after you confirm the current settings.



Cut Marks

➔ To place cutting (crop) marks at the corners of the plot layout at the sheet corners:

1. Activate Marks on the DefPlot menu.



Laying Out the Drawing on the Plot Sheet

Once the plot sheet is set up, you can lay out your drawings on the sheet at their various plot scales. The different drawings laid out on a sheet are known as "details."

➔ To place the details on the plot sheet:

1. Turn on the layers for the detail you currently wish to lay out on the plot sheet.
2. Select DefBlock from the PltFrame menu (the main PlotManager menu). The cursor changes to a giant crosshair.

3. Choose Scale and select one of the scales to determine how this detail will be plotted.

To add more plotting scales, refer to the *DataCAD Plus Reference Manual*. Don't worry if the scale appears to be too large or too small because you can easily change it later.

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4. Select PenDat to assign a pen file. This contains the pen assignments for the current detail you are laying out.

This only applies if PenBlock has been activated in the PltFrame menu (the main PlotManager menu).

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5. Activate DIM Fact if you want PlotManager to adjust the size of the dimension text in the detail according to the selected plot scale.

If you used ZAC dimensions, they must first be exploded to associative dimensions for this feature to work.

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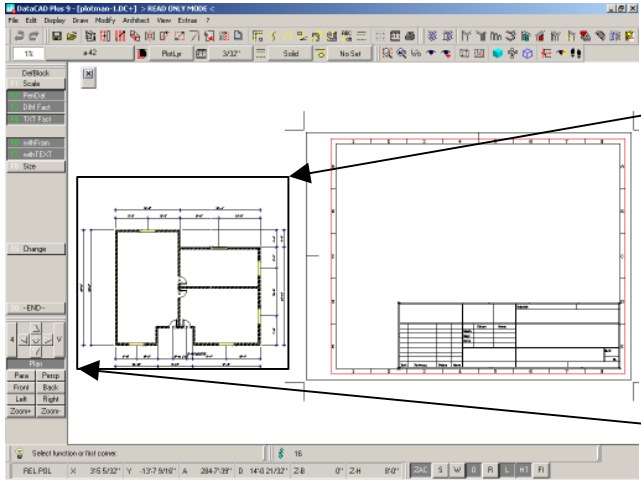
6. Activate TXT Fact if you want PlotManager to adjust the size of normal text in the detail according to the selected plot scale.
7. Activate withFram if you want PlotManager to generate a rectangular frame around the detail.
8. Activate withTEXT if you want PlotManager to generate a text description for the detail.
9. Select Size for the text description of the detail, input a value, press Enter, and click on Yes.

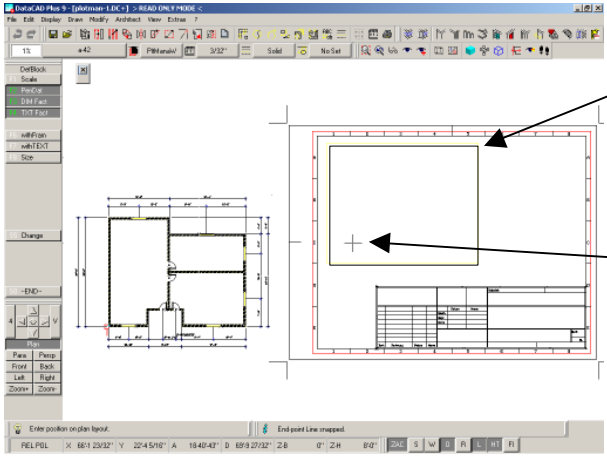
Positioning Detail Boxes on the Plot Sheet

➔ To position the detail box(es) on the plot sheet:

1. Complete all the settings for your plot. PlotManager prompts you to "Select function or first corner" of the detail box.
2. Click once to select a point to the bottom left of the entire detail. You are now prompted to select the second corner of the detail box.
3. Pull the rubberband toward the top right of the detail and click once. After selecting the second corner of the detail box (source box), you are prompted to "Enter reference point."

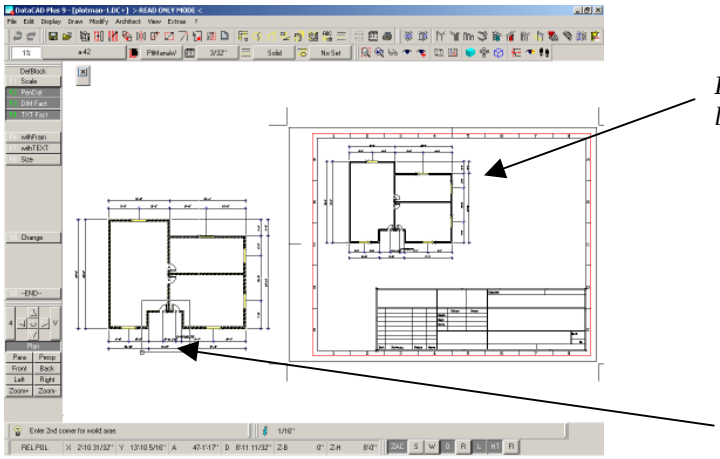


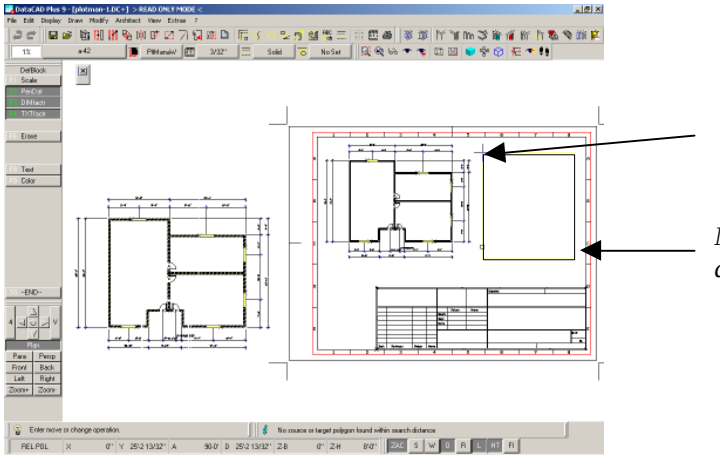
4. Snap to a position on the detail by using either your middle mouse button or pressing N. A bounding box that represents the size of the detail is now attached to your cursor. Notice that the cursor's crosshair is attached to the detail box where you snapped for the reference point. You are prompted to "Enter position on plan layout."
5. Drag the box and click to place the detail on the plot layout sheet.
6. Press Enter twice to release the detail from the bounding box onto the plot sheet.

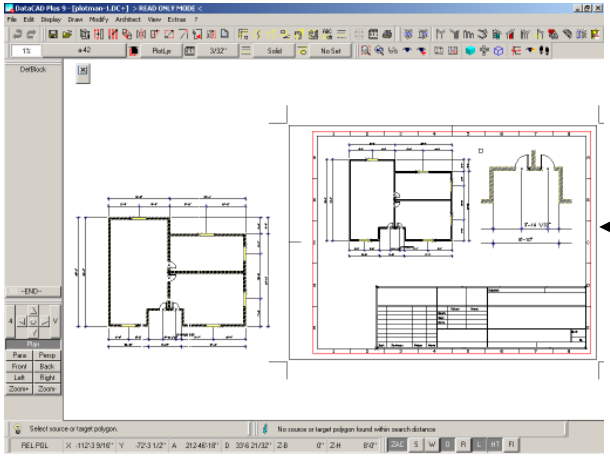


The bounding box will disappear and the detail will be shown at the scale you set. PlotManager prompts you to select a function or another first corner of a new detail box.

7. Select a new scale for the next detail box by choosing Scale and using a value from the available options.
8. Click on the first and second corners of the new detail box, select the reference point, drag and place it on the layout sheet, and press Enter twice to reveal the detail within the plot frame.







Completed layout sheet with two details at different scales

The procedure for creating layout sheets should now be clear. In addition to creating a new detail from the same drawing (Clipped area) as illustrated in this example, various layers could have been activated to display a totally different drawing from which additional details could have been laid out.

Making Changes to the Plot

➔ To change the current position or scale of one of the details laid out on the sheet:

1. Select Change from the DefBlock menu. You are prompted to "Select source or target polygon." (The source is your original drawing; the target is the image on the plot sheet.)
2. Click on the detail you want to change. The detail will once again be attached to the cursor.
3. Select Scale and choose a different scale.
4. Reposition the detail on the layout sheet.
5. Click once to reveal the detail in its new position on the plot sheet.

Save the Layout Sheet

➔ To save the layout sheet you created:

1. Right-click until you reach the main PltFrame menu (the main PlotManager menu).
2. Select SavePlot, type an eight-character name in the input field, and press Enter. You are prompted to "Enter a description" for this sheet.

3. Type a description and press Enter to save the layout sheet to the DCAD_LLC\DCADPLUS\PLT folder. The file name that is created has an extension of .out .
4. Follow the same procedure to create additional plot layout sheets.

➔ To plot any of these layout sheets:

1. Select Plotter from the UTILITY menu or select PlotMenu from the main PlotManager menu.
2. Select LyoutSet.
3. Choose Plot Def.
4. Select one of the layout sheets that you have saved.
5. Select Plot. The Print dialog box appears.
6. Press Enter and retrieve your plot from the printer/plotter.