

EXTERNAL REFERENCE FILES (XREFs)

XREFs (External Reference Files) allow you to view, or “reference”, another drawing file within the file you are working on. As a “reference” drawing it cannot be edited, but you can see it, snap to it, draw on top of it, and turn its various layers ON and OFF. Because the referenced drawing file is actually another drawing file outside of, or “external” to, the main drawing file, it is called an External Reference File, or XREF for short. The XREF file is not a different kind of drawing file from any other. It is a standard .DC5 drawing file. The only thing that makes it and XREF is the fact that other drawings use it as a reference. Any drawing file can be an XREF, you can XREF more than one drawing file at one time, and you can even nest multiple XREFs inside of one another.

Let's establish two key definitions:

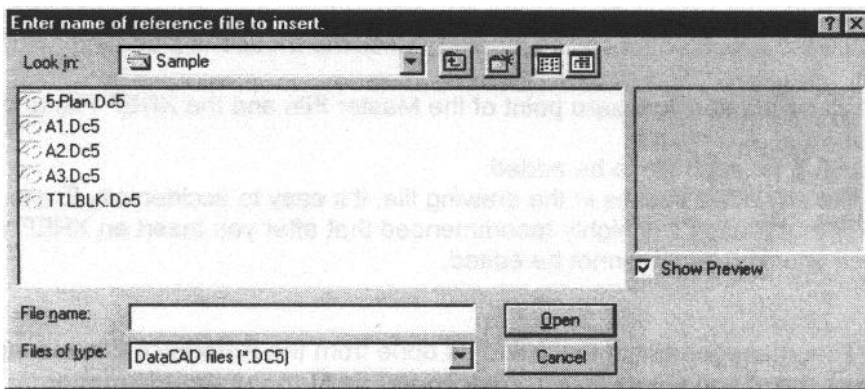
Master File: The active .DC5 drawing file in which you are drawing and editing.

XREF File: The externally referenced .DC5 drawing file.

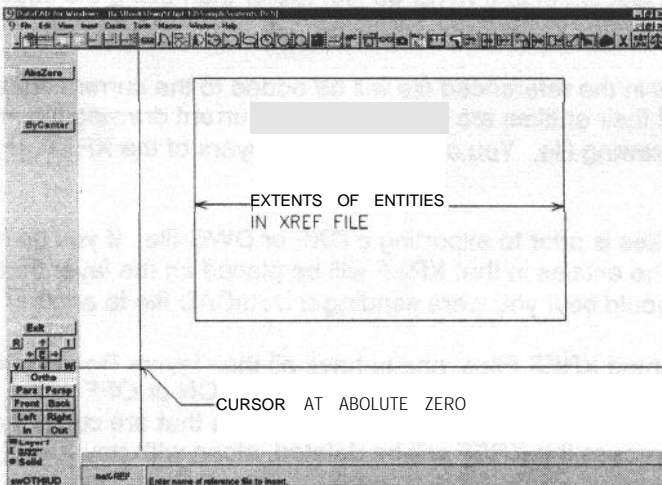
INSERT A REFERENCE FILE

To reference and external DataCAD drawing file within the current drawing file:

1. Very Important! XREFs are inserted into the currently active drawing layer. So in most cases you will want to create a new layer just for the XREF. Make that layer the active layer (**Layers/SetActive**) before going onto the next step.
2. Select **Insert/Reference File**. A dialog box like the File Open dialog box will appear, like this:

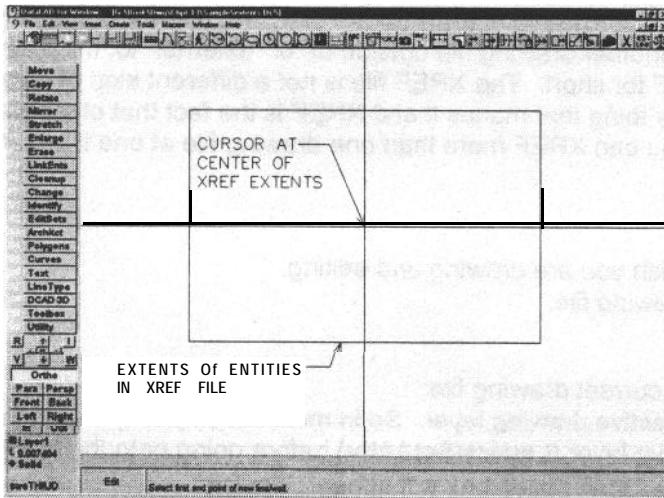


3. Double-click on the file to be XREFed, or highlight the file and select **Open**. You can only select and insert one drawing file at a time.
 - a. By default your cursor will be attached to the absolute zero point of the .DC5 file that is being referenced, and the extents of the entities of that file will be represented by a rectangular box. Unless the entities of the XREFed drawing were drawn on top of the absolute zero point of the drawing, the cursor will probably be offset from the bounding box, like in this example:



Often the absolute zero point may be dozens or even hundreds of feet away from the entities that make up the XREF, making placement of the XREF difficult. In that case you may want to use the **ByCenter** option.

- b. When you select the **ByCenter** option, the absolute zero points are ignored and the cursor will be located in the center of the extents of the XREF entities, making placement of the XREF easier and more precise, like this:



4. To place the XREFed file in the current drawing:
 - a. Locate the bounding box where you want the XREF entities to be located. Click the mouse to place the XREF in the drawing at that location, or
 - b. Click on the **AbsZero** button. This will force the absolute zero point of the Master File and the XREF File to be overlaid directly on top of one another.
5. To insert more XREFs, follow Steps 1 through 4 for each file to be added.
6. Because the entities of an XREF look just like any other entities in the drawing file, it's easy to accidentally Erase, Move, Copy or otherwise edit an XREF. For that reason it is highly recommended that after you Insert an XREF you then use **Layer/Lock** to lock the layer, since a locked layer cannot be edited.

MANAGE REFERENCE FILES

Once an XREF File is inserted into the Master File, management of that XREF is done from the Reference File Manager, RFM for short. To access it, go to the drop-down menu and select **Insert/Reference File Management/Manager**.

Refresh

Selecting this option will cause all the highlighted XREFs to be refreshed. **DataCAD** goes to each highlighted XREF file, reads the last saved information from it, then updates the current drawing. Refresh will re-read the XREFed file to update the entities, while maintaining the layer On/Off settings that are currently set for that XREF in the RFM.

Reload

Selecting this option will cause all the highlighted XREFs to be reloaded. **DataCAD** goes to each highlighted XREF file, reads the last saved information from it, then updates the current drawing. Reload will re-read the XREFed file to update the entities, but will use the layer On/Off settings that were last set in that XREFed file, rather than using the settings that were set in the RFM.

Bind

When you select a reference file to be bound, all the layers in the referenced file will be added to the current drawing file, and the file reference will be deleted. These layers and all their entities are now part of the current drawing file, increasing the file size by however many entities were in the bound drawing file. You can bind all the layers of the XREF, or only selected entities.

One instance where you will want to **Bind** your reference files is prior to exporting a DXF or DWG file. If you do not first Bind an XREF, the **XREF** entities will be exported, but all the entities in that XREF will be placed on the layer that the XREF is located on in the Master File. Another instance would be if you were sending a **DataCAD** file to another **DataCAD** user that does not have version 9.

All Use the **Bind/All** command to bind the highlighted XREF Files, and to have all their layers Bound into the current drawing file, regardless of whether those XREF layers are currently turned ON or OFF.

On Use the **Bind/On** command to bind the highlighted XREF Files. But only the layers that are currently turned ON in each XREF File will be Bound. In the process the XREF will be deleted, along with any XREF layers that were turned OFF when the XREF was bound.

Both the **All** and the **On** options only affect the XREF Files that are highlighted in the Reference File Manager.

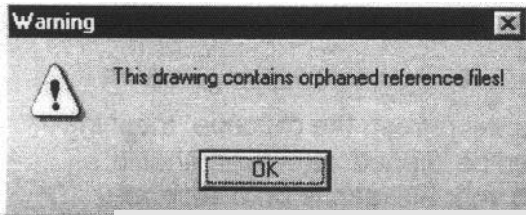
If a layer name in the XREF File is identical to the layer name in the Master File, no duplicate layer names will be created in the **Bind** process. The XREF entities on that layer will be added to the identically named layer in the Master File.

Delete

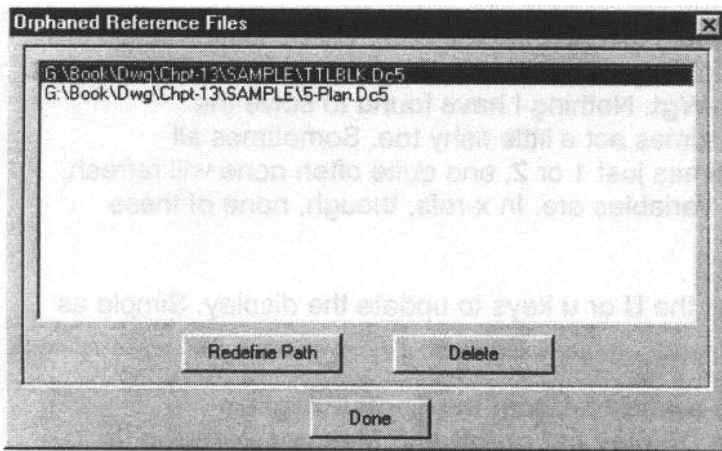
To delete an XREF from the current Master File, highlight all the XREF Files that you want to delete, then select **Delete**. After exiting the RFM with the OK button all those XREFS will be deleted from the Master File. If you mistakenly deleted an XREF, use the Undo feature (**Ctrl+Z**) to bring it back.

ORPHANS

In order to reference a drawing file, **DataCAD** needs to know exactly where on your computer that drawing file is located. The exact path and file name is stored with the Master File drawing. If you move the XREF File to a new location on your computer then **DataCAD** won't be able to find it. The XREF File has become an "Orphan". You will know if you have an orphaned file if you open a Master File and get this message:



Click on **OK** to close the error message. To continue using the XREF File you need to tell **DataCAD** its new location with the Orphans dialog. You cannot use the Orphans dialog to locate the XREF if you have renamed the XREF; only if you have relocated it. So be sure NOT to rename XREFs if you want to continue to use them. To access it, go to the drop-down menu and select **Insert/Reference File Management/Orphans**. The **Orphaned Reference Files** dialog box will appear:



The main window of the dialog will display all the currently orphaned XREFs, along with their original locations.

Redefine Path

Use this option to tell **DataCAD** where the XREF Files have moved to.

1. First make sure you know the file folder that the XREF is now located in, then highlight one or more of the XREF files in the main window of the Orphans dialog.
2. Click on **Redefine Path**. A **Browse for Folder** dialog will appear. Find and click on the folder where the XREF file is now located (by default, **DataCAD** will begin searching in the current drawing file directory).
3. Click on **OK**. If you have selected the correct new location, the old path with the XREF file in it will disappear from the Orphaned Reference Files dialog, indicating that a new path has been selected, and the correct drawing has been found in it.
4. Click on **Done** to exit the **Orphans** dialog.

Delete

Use this to remove the reference to an orphan. Since an orphaned XREF is not actually a part of the current drawing file, no entities are deleted. It is only the reference to that XREF that is deleted from the drawing file.

DRAWING OUTSIDE of CLIP CUBES

From the clip cube menu, create a cube and toggle it on. Now just your restroom will be shown. Next toggle **off F7-Refresh**. This means that your drawing will not be refreshed when you turn on and off the clip cube. **Now** select **F1-ClipOn** to turn off your clip cube. The cube is turned off and your drawing is **NOT REFRESHED!** Now you can go ahead and draw outside the clipcube. Place text, draw lines, zoom in/out to your hearts content! You can even hit **ESC** or select **R** from the navigation pad.

First catch, (which is minor) is that because it is a clip cube, you cannot snap to the “visual” endpoint of the clipped off entities, because they really aren’t endpoints. You can snap to all the other normal snaps though, which should suit you just fine!

Second catch, You **CANNOT** select one of your **GoToViews** as this will refresh the clipcube, meaning that all the entities you have just drawn outside the clip cube will then be clipped. However, should this happen it is no major catastrophe provided that you are drawing your elevations on a separate layer(which you should be anyway). Just reset the clip cube/refresh as mentioned above. Your elevation will then be clipped out. All you have to do is turn off and then on the layer that your elevations are on.

Third catch, you cannot close the drawing. You may save it as often as you like, but when it is closed/reopened the CC gets refreshed. You will have to reset as mentioned above in catch 2.

Fourth catch, beziers, symbols, and hatch patterns which extend past the cube will be fully regenerated, as well as lines which are assigned weights greater than 1. To get around the line weight problem, just **go to Display** and turn **off ShowWgt**. Nothing I have found to solve the **beziers/symbols/hatch** though. Arcs and circles sometimes act a little fishy too. Sometimes all arcs/circles decide they want to be refreshed. Sometimes just 1 or 2, and quite often none will refresh. I haven’t played with it enough to figure out what the variables are. In x-refs, though, none of these mentioned in **#4** seem to be a problem.

When you need to see the rest off the drawing just hit the **U** or **u** keys to update the display. Simple as that!

There is one further setting which you must be made aware of. Under the **Tools/Program Preferences/Misc** tab, there are check boxes for the **Display list on/off** and **Max acceleration**. In order for this to work, the display list must be on (no big deal, we all draw with it on anyway). **NOW THIS IS IMPORTANT!** In order for it to work on an X-ref, max. acceleration **MUST** also be on, otherwise the first time you zoom in/out the X-ref will be refreshed. Strange that only the x-ref gets refreshed and not the whole drawing, but that is how it works!

This method works **GREAT** for laying out Clipcubes over Clipcubes in MSP (see below).

OVERLAPPING CLIP CUBES IN MSP

Using MSP in conjunction with **ClipCubes**, I have figured out a way to overlay two cubes in exactly the same location to allow **text,etc.** to extend past the boundaries of the clipcube. This has proved to be extremely valuable when laying out details, blowups, etc. When, for instance, I want to lay out a 1/4" scale bathroom blowup or a 1/2" pilaster detail, I use a **clipcube** to isolate the portion of the detail I wish to enlarge, and then toggle on/off the relevant layers (ie. 1/8 scale text-off, 1/4 scale text-on). Unfortunately, though, in some instances, we need the **clipcube** to be cut very tight to the detail, but we also need to be able to place text outside the extents of the clipcube. This can be done very quickly and easily with only the creation of 1 additional GTV and 1 additional MSP detail.

First, you need to place a **clipcube** around the detail. **Recalc/Extents** and create a GTV (dtlplan1) using this cube location. Then turn off the clipcube. Next, you need to create a layer to contain

whatever it is you want to extend past the **clipcube**(ie. 1/2"text). With the overall drawing displayed and this new layer active, enter the text, etc. where you would like it to be. Place a new **clipcube** around the entire detail this time, including the text you just created. Set this new layer as the only active layer using "**ActvOnly**". **Recalc** extents and create a 2nd GTV (dtltxtl) using this new cube location. Leave this GTV as the active view.

This next part is slightly different for absolute vs. relative input modes. I have explained it using relative input modes. At the end I have described how to use absolute input modes.

Now go to Plotter/MltLayout/Sheet and open up an MSP sheet. From the MltLayout menu chose **GotoView** and position the first **GTV** you created at the scale and location you desire by left-clicking **ONCE** with the mouse. Give it a name (dtlplanl). Next choose **THE SAME GTV** you just placed **WITHOUT CLICKING ANYWHERE ELSE IN THE DRAWING AREA!!** The area of the detail will display attached to your cursor. Instead of clicking the mouse to place it, hit the **space bar**. Then hit **Enter** twice to accept the location (in relative cartesian 0,0), which is directly over the first detail. Give it a name (dtltxtl). Right click to go back to the MltLayout menu and pick **Details/Update** and select dtltxtl. The second detail you had located will then update with the new GTV parameters, but in the same location, which just happens to be exactly lined up with the detail. Because the detail that was updated was directly on top of the 1st one, they both disappear visually. You need to pick another sheet and then return to this one to see both the details. So now you have two **clipcube** exactly aligned.

The important thing to remember is that the detail layout is determined by its center point. This means that when you place the first detail, your mouse click resets the coordinates to (0,0). You cannot click in the drawing area again. Doing so will reset the relative x,y coordinates of (0,0) to this new point, instead of the center of the 1st detail. The above example was done for relative polar/cartesian.

The second thing to remember is that when you go to update the detail, the **GTV** which you want to update it with must be active before entering the MSP sheet.

The downside to this method is that to relocate the detail, you need to delete both details and lay them out again. However, this should only take a matter of seconds to do this. The whole process can also be done in under a minute (not including the addition of the text etc.).

This ability to add entities outside the **clipcube** has been invaluable. I have been able to use clipcubes for almost all my details. Meaning, edit walls on the overall plan and all your details will update automatically. The old way was to copy portions out of the drawing so that I could add all the necessary notes without interference from other entities, etc. Then the client would change something and you have to edit all the details too.

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