DesignCAD 3D Max 24.0 Release Notes

August 2014

DesignCAD 3D Max 24.0 includes the following improvements and fixes:

New Features:

RedSDK Mode is now available for 3D views on fully-supported graphics hardware. In DesignCAD 3D Max 23 it was only available for 2D views. Now DesignCAD offers 3D views with RedSDK Wireframe, Hidden Line, and Draft Shaded viewing modes. See the "About RedSDK Mode" topic below for a more in-depth description of what RedSDK Mode is and when it might be useful.

New "Solid Surface" entity type -- Historically DesignCAD solids have only been comprised of two fundamental entity types: planes and grids. Grids are a very efficient way of expressing many surfaces, but once a Boolean operation has been done on a grid, it is usually broken up into many individual planes. This is a very inefficient way of representing a surface. The new "Solid Surface" entity type offers a middle ground between grids and planes – while less memory-efficient than a grid, it is more versatile than grids and memory-efficient than a bunch of planes. The Solid Surface also tends to triangulate complex planar faces; this can be advantageous when exporting a drawing for use in some other programs, particularly when the drawing contains planes with holes.

New Solid to Surface command -- **Edit/Selection Edit/Convert/Solid to Surface** lets the user convert the selected solid(s) to the new Solid Surface type. The command can also be run via the command line. Select the solid(s) to be converted, press the spacebar, and enter "SolidToSurface".

New Surface to Solid command -- **Edit/Selection Edit/Convert/Surface to Solid** lets the user convert the selected Solid Surface entities to regular solids (this will involve creating an individual plane for every facet of the Solid Surface entity). The command can also be run via the command line. Select the Solid Surface entities to be converted, press the spacebar, and enter "SurfaceToSolid".

New "Use surface representation for solid operations" option -- This new option, located in the General Options tab, tells DesignCAD to convert the results of most solid operations (Solid Add, Solid Subtract, Slice, etc.) to the new Solid Surface entity type. The setting is off by default, but can be turned on by setting the new Sys(1145) = 1, or by setting the checkbox in General Options.
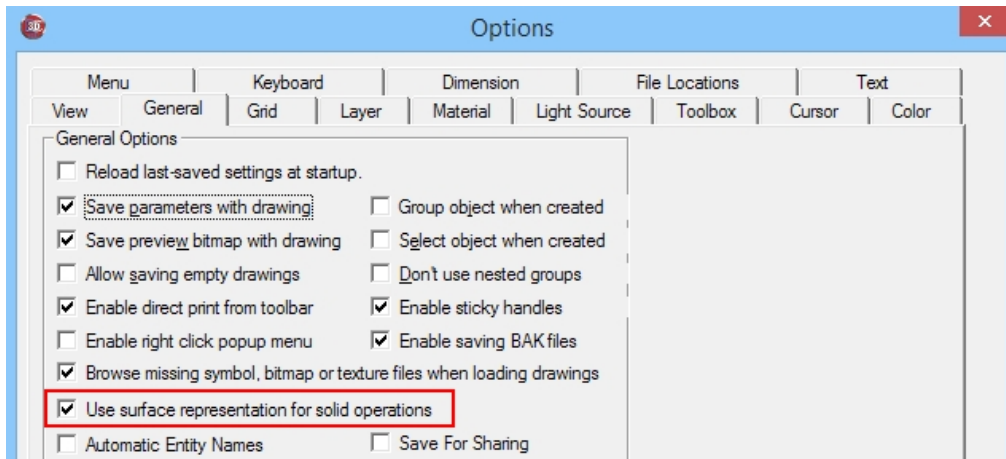
Double Line Fill Pattern saves as default – Now when you change the double-line fill pattern using the Double Line Toolbox, that pattern becomes the new default one . In previous versions, once you restarted DesignCAD, the Double Line fill pattern would always revert to Win_Solid.
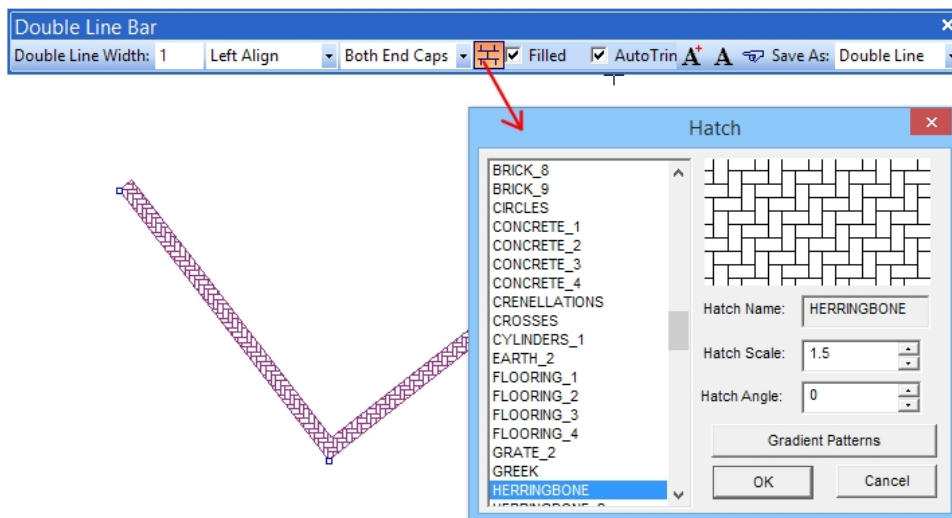

New Match Properties Tool command – Edit/Selection Edit/Match Properties Tool lets you select some entities, than pick another object whose properties you want to apply to the selected ones. If you are already familiar with DesignCAD's "Same As" finger, this is a more versatile expansion of that feature. For example: you have a bunch of text in several different styles, colors, and layers, and you want to change them all to match the style color and layer of one particular bit of text. Select the text to be changed, and run the Match Properties Tool command. A dialog box then appears; click on the "source" object, and the "Available properties" list updates to indicate what properties are available from that picked object. You can select which ones to apply to the selected text by clicking on the property in the left-hand column and clicking the >> button to assign them to the right-hand column. You can remove properties from the right-hand column by clicking on them and then clicking the << button. Entire groups of properties can be moved at once by clicking on the group name (ex. Common, Text, Dimension, etc.) and then the << or >> button. Click OK when done selecting properties. Those

properties will then be applied to the selected item(s). You may even pick the "source" object from among the selected items.

The picked "source" may contain properties that don't apply to all of the selected items; that's no problem, the command intelligently skips non-applicable properties when applying them to each individual selected object.

The Match Properties Tool command can be run from the menu, or by pressing the spacebar and entering "MatchProperties" on the command line.
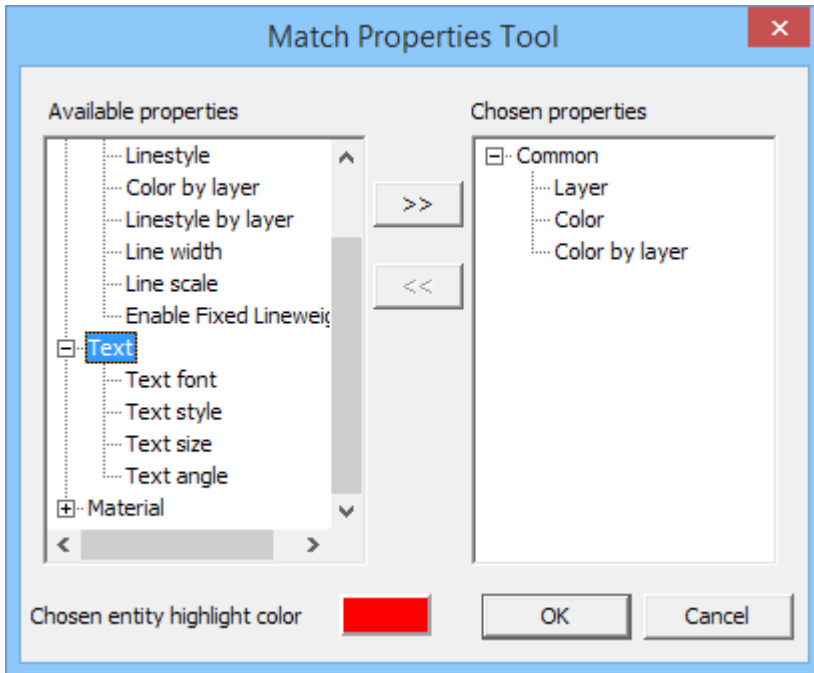
New Check All/Uncheck All button in the Workspace Configuration dialog – By popular request, a quick method is now available to let you easily select all or none of the settings groups to be saved to a DesignCAD workspace.
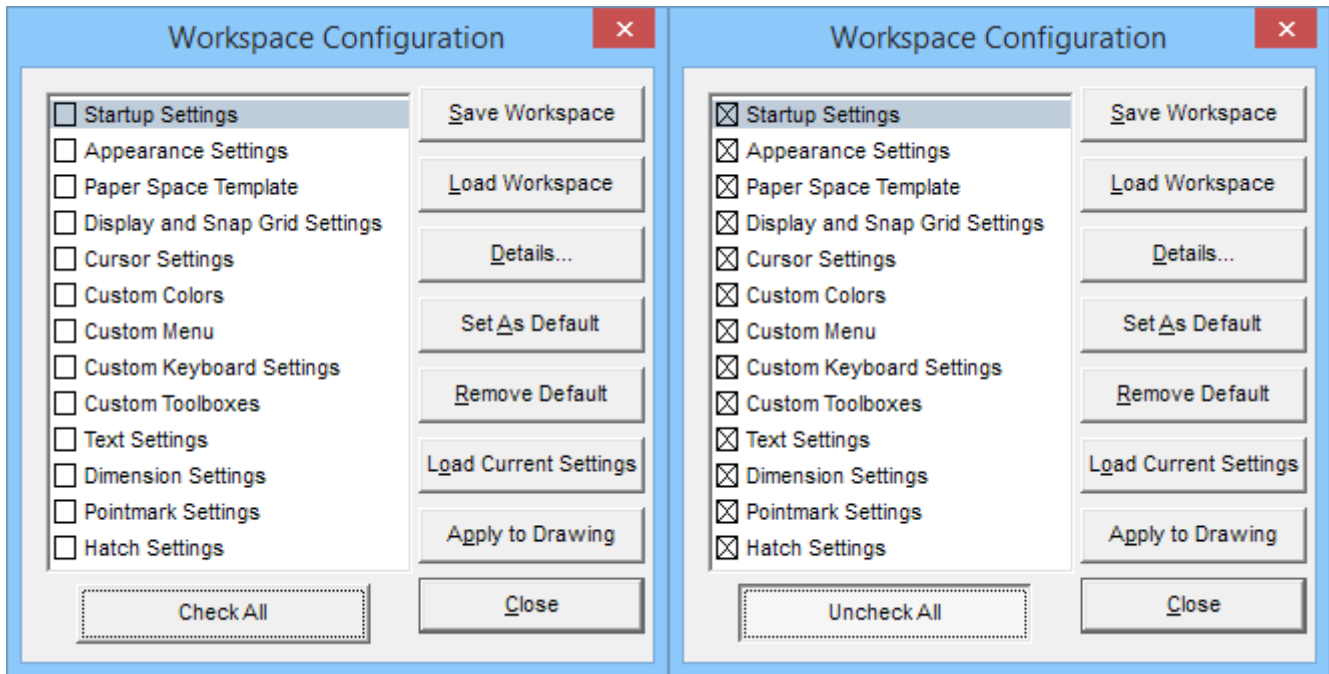
New DWG/DXF Export Option – There is now an option to export Solid Surface entities as 3DFace objects to DWG and DXF files. This improves export compatibility for many 3D programs that only support a limited number of entity types. **Note:** If exporting for use in such a program, it may be helpful to also convert any "classic" solid objects to Solid Surface entities before exporting, then Undoing that conversion afterwards.
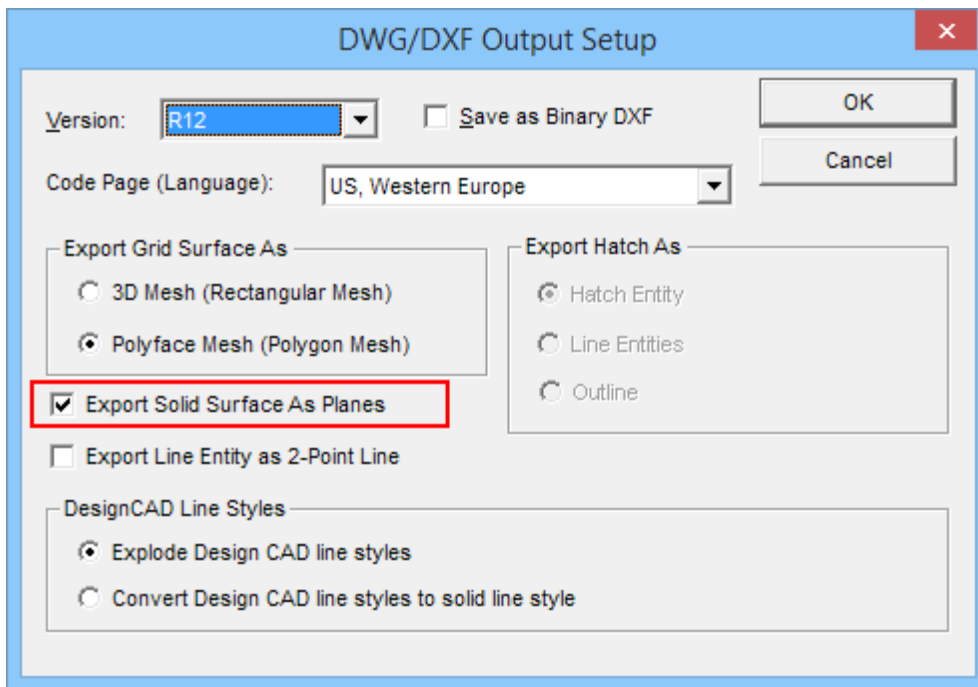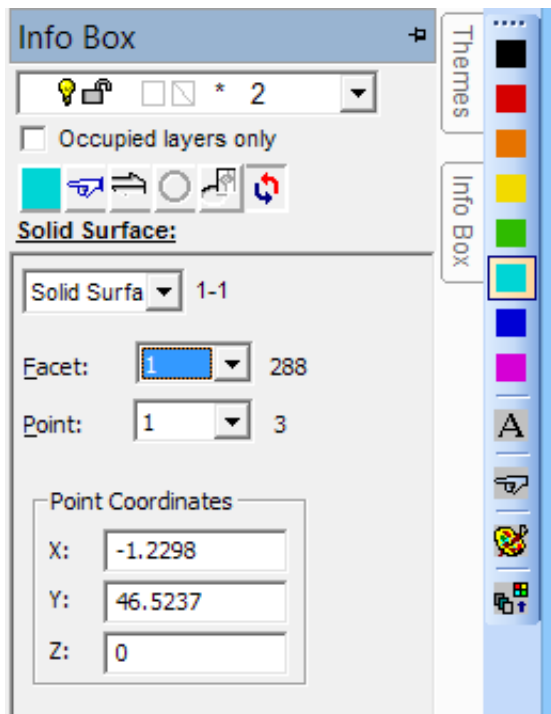

Info Box Additions – Some new capabilities have been added to the Info Box.

When viewing the layer list for selected entities, you can now choose to only list layers that are actually occupied by the selected objects:
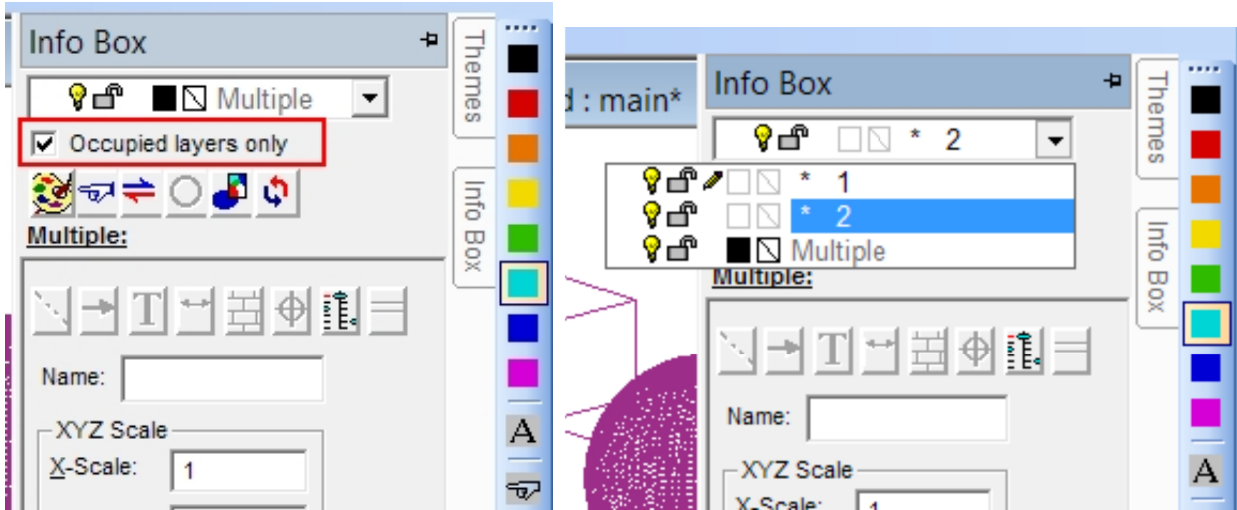

When viewing the details of a Solid Surface entity, you can view and edit the points of individual facets.

Changes to Hidden Line and Shading dialogs -- With the addition of RedSDK features to 3D mode, we've made some changes to the appearance of the Hidden Line and Shading command dialog boxes, and consolidated them into one dialog.

Hidden Line

When you run DesignCAD in the default GDI mode (i.e. RedSDK Mode is OFF), the Hidden Line removal dialog will look like this:
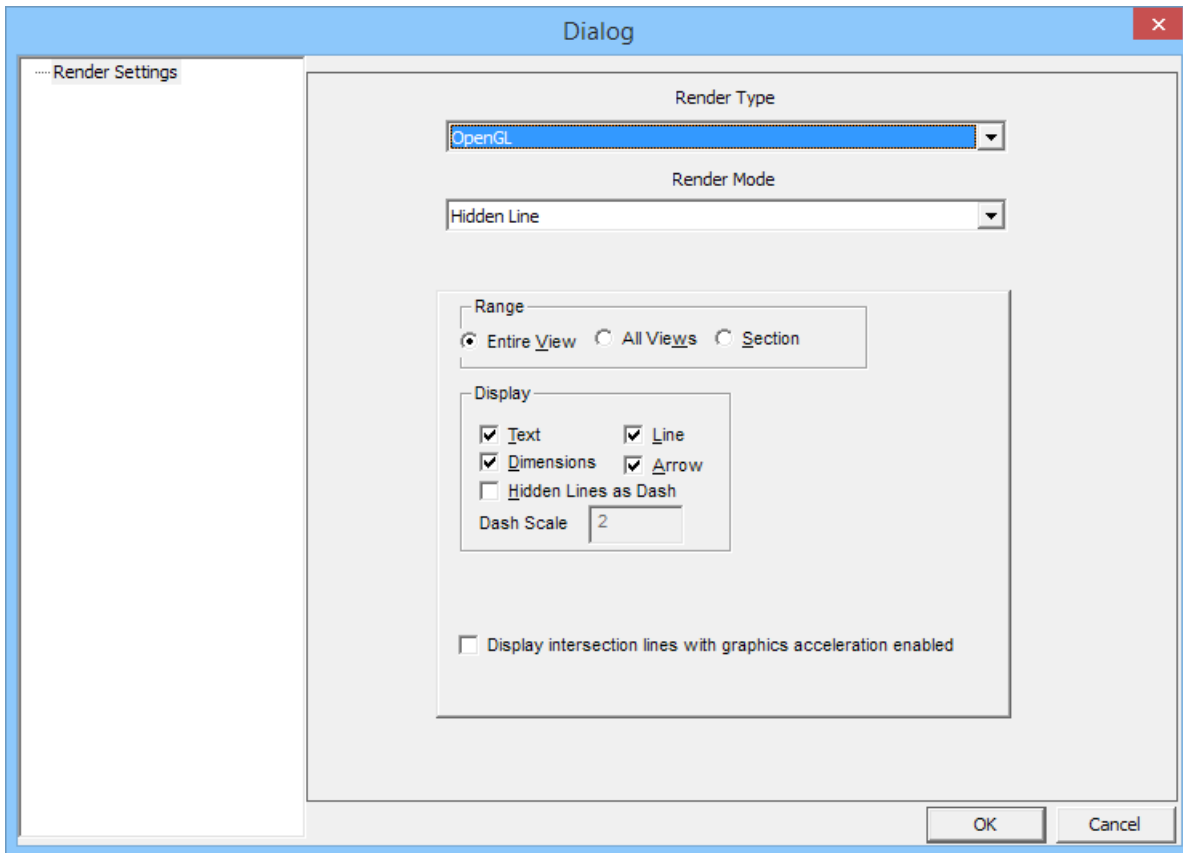

Note that there are two drop-lists: "Render Type" and "Render Mode".

Render Type offers these options: **GDI** and **OpenGL**. The **GDI** render type is the DesignCAD "classic" hidden line mode. The **OpenGL** render type gives the same result as checking the "use graphics acceleration" checkbox would have in previous versions.

The "Display intersection lines with graphics acceleration enabled" checkbox affects OpenGL hidden-line renders only, and shows a line where one surface penetrates another even if there's no explicit edge there.

Render Mode lets you switch between Hidden Line and Shaded mode in the same dialog box.

If you run Hidden Line removal in RedSDK Mode, the available options are slightly different:
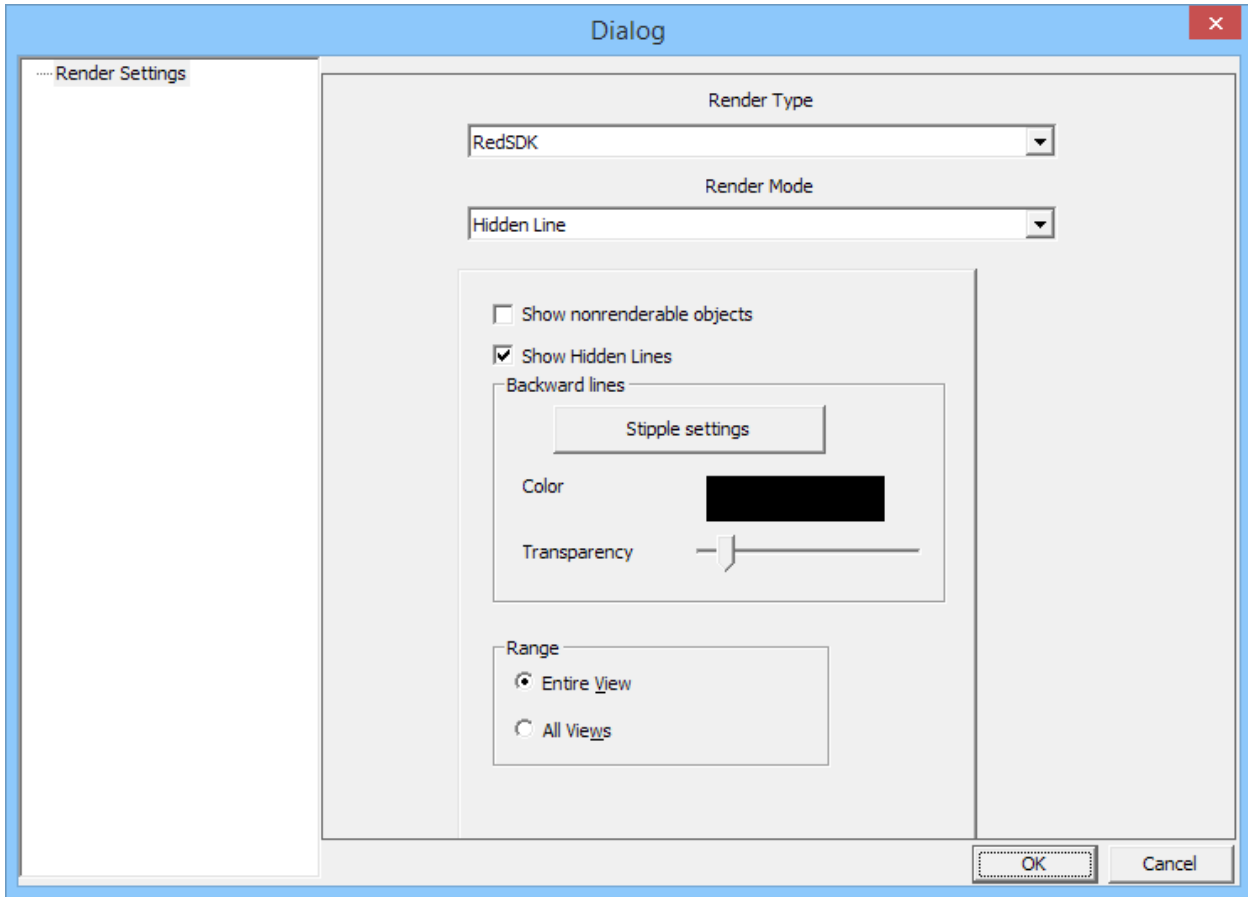
In this case, the Render Type defaults to RedSDK, and rather than having individual checkboxes for showing Text, Dimensions, Lines and Arrows, there's only one checkbox for **Show nonrenderable objects**. Checking or unchecking this box is the same as checking or unchecking all the other types in a GDI or OpenGL view.

Note also the checkbox for **Show Hidden Lines**. This allows you to show the lines that are hidden by surfaces in front of them. You can modify the color of these lines, and adjust the Transparency setting of the front facets to make the hidden lines fainter or darker. Setting the Transparency slider all the way to the left effectively completely covers the hidden lines; setting it all the way to the right makes them very visible.

The Stipple settings button allows you to set a bitmask for the appearance of the hidden lines.
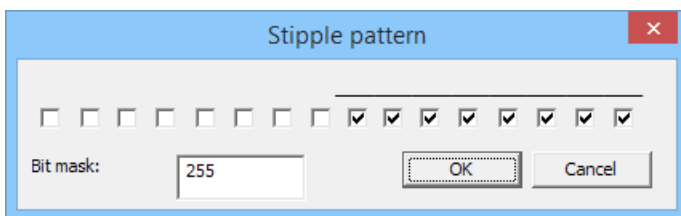
What the checkboxes do is set a pixel mask for the hidden lines. Check all the boxes to make a solid line; check every other one to make a dotted line; or check and uncheck them in patterns to make dashed lines or combinations of dots and dashes. If you find a pattern that you use often, write down the bitmask value, and

enter it directly in the future rather than checking and unchecking boxes. This hidden line style is only available for RedSDK hidden line render types.

Shading

If you click on the Shade button (or switch the Render Mode to Shading or Draft), the dialog box will change to show the various shading options.
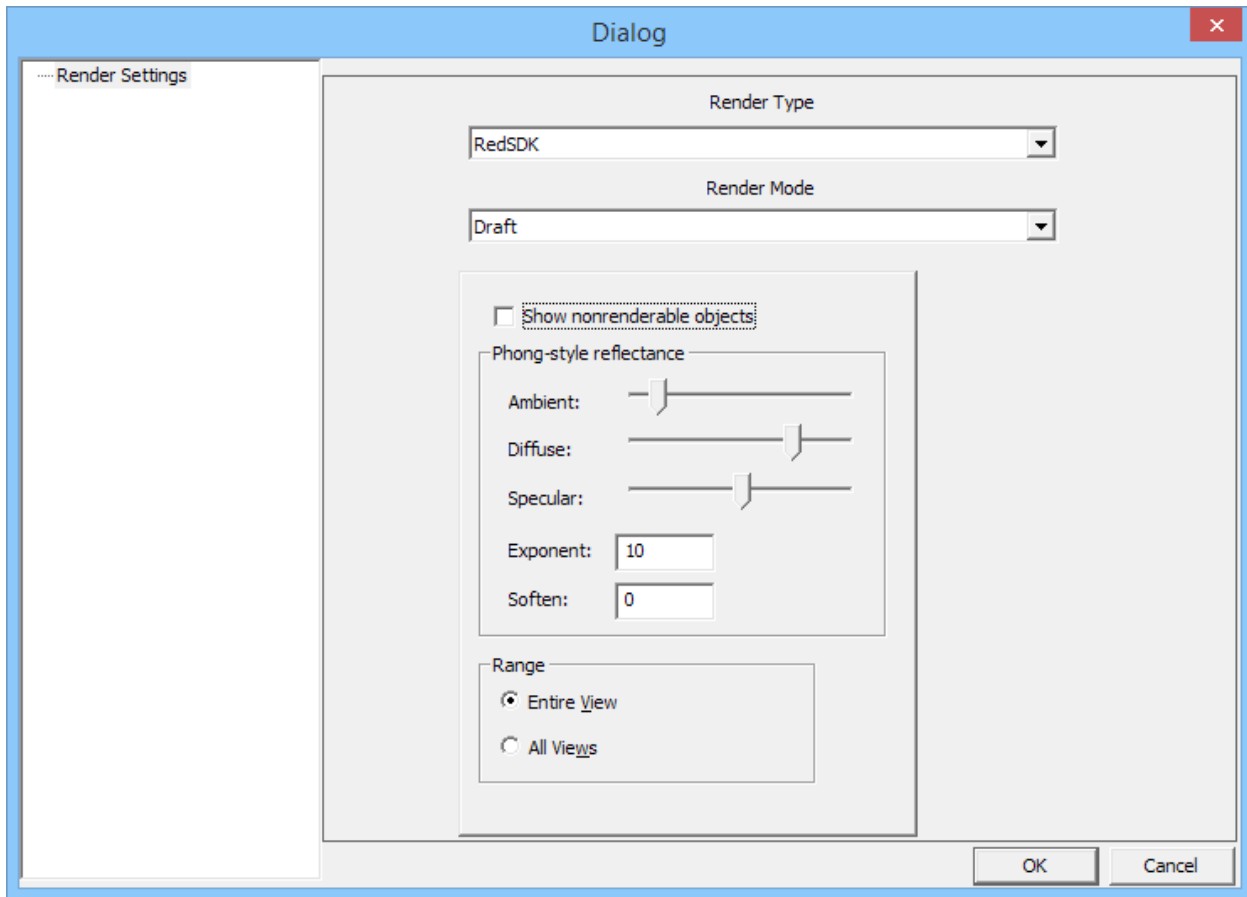
The Render Type drop list will now offer two (or three, if in RedSDK Mode) settings: GDI, OpenGL, and RedSDK.

The GDI and OpenGL render types offer the same rendering options as in previous versions:
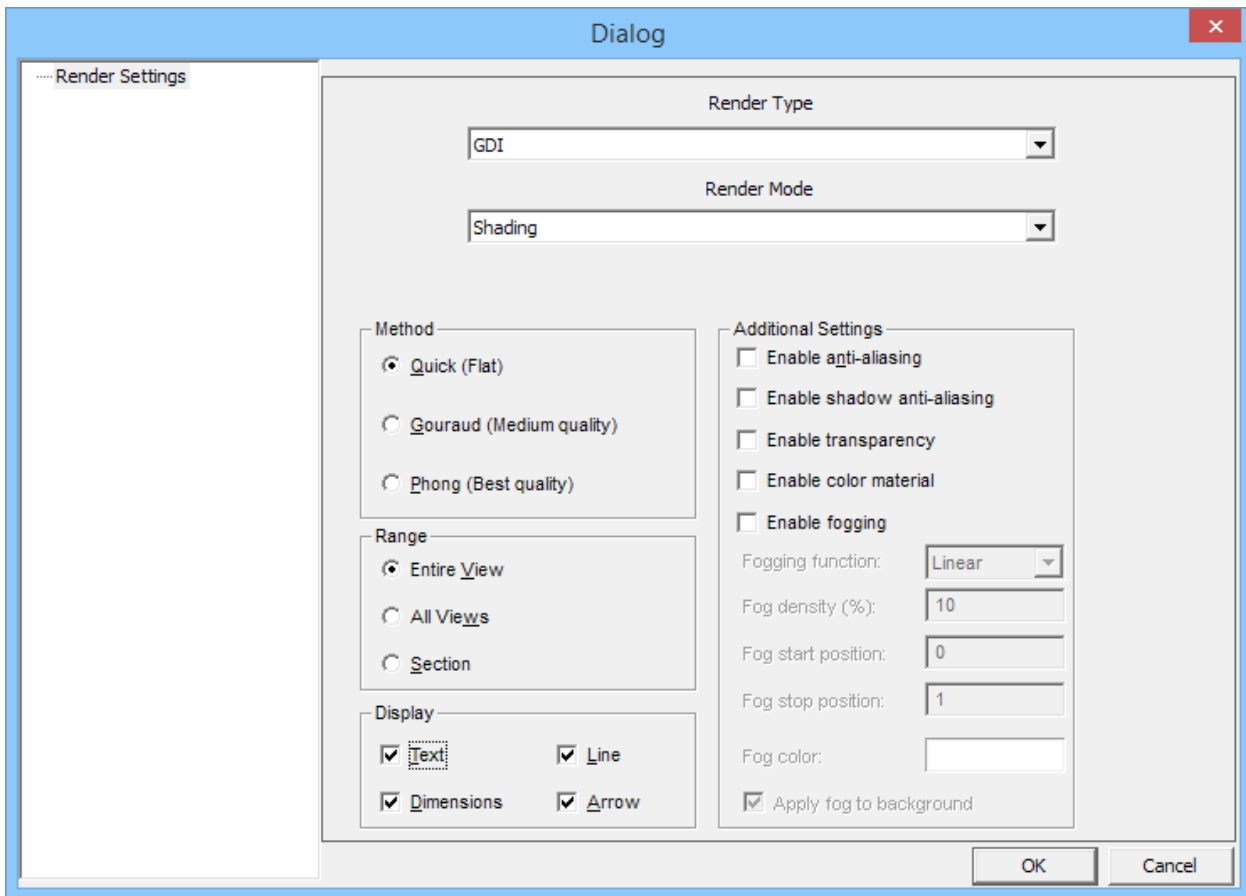
The RedSDK render type offers RedSDK-specific render settings:

Note that, as with RedSDK Hidden mode, there is only a single "Show nonrenderable objects" checkbox, rather than individual checkboxes for lines, dimensions, etc. In addition there are sliders for Ambient, Diffuse, and Specular settings; these define the global material settings (other than color) for the scene. RedSDK Draft shading does not utilize the ambient, specular, and diffuse settings from the materials. I prefer to run with the Diffuse slider most of the way to the right, and specular most of the way to the left.

The "Exponent" value sets how "wide" the specular highlight is on surfaces. A high exponent tends to produce small sharp highlights, and a low exponent tends to broad, soft highlights.

The "Soften" value sets the overall smoothness or softness of surfaces. A low value leads to brighter highlights, and a high value to less-pronounced ones.

General fixes

Solved a problem where Drag-select was not selecting some grouped items.

Solved a problem where some symbols from older DesignCAD drawings (circa DesignCAD 97 and DesignCAD 2000) were not loading correctly or causing DesignCAD to crash.

Fixed a problem in which the Balloon command was ignoring the Balloon Size field and used the current Text size instead to determine the balloon's radius.

BasicCAD changes

New Sys() functions:

Sys(1145) – enables (1) or disables (0) the "Use surface representation for solid operations" checkbox in General Options.

Sys(214), Sys(215), Sys(216) – Read-only floating-point values to help you determine the X, Y, and Z location of the camera's current target location – i.e. "what coordinate is the camera pointing at?" To change the camera target, run the SetViewerPoints command – you only need to set the first point, the second ("where's the camera?") is optional.

New drawing commands:

MatchProperties – No parameters are available yet; this just starts the Match Properties Tool command from a BasicCAD script. You'll still have to manually pick the "source" object and select parameters to be copied.

SolidToSurface – This command converts the selected solids to the new Solid Surface entity type. No parameters.

SurfaceToSolid – This command converts the selected Solid Surface entities to regular solids (note: The result will be all planes, no grids). No parameters.

About RedSDK Mode

If you're new to DesignCAD, or are upgrading from version 22 or earlier, you may be wondering what "RedSDK Mode" is.

RedSDK Mode is an optional mode of DesignCAD that uses a specialized programming interface to draw things using the system's graphics processor instead of using native Windows graphics functions. RedSDK Mode was introduced in DesignCAD 3D Max 23, but was only available for 2D views. With DesignCAD 3D Max 24, RedSDK Mode now also operates on 3D views.

RedSDK Mode uses special algorithms to speed up certain display operations (mostly zooming, panning, and in 3D, rotating the view); however, this comes at a cost of added RAM requirements and longer load times when

opening drawings. Depending on what you're doing, RedSDK may make some operations much faster; others will be slower than in DesignCAD's native "GDI" mode.

Generally speaking, viewing, zooming, panning, and rotating the view in RedSDK Wireframe, Hidden Line or Draft Shading modes will *on a well-behaved graphics system* be much faster than in GDI mode. Selecting and editing objects in Point Select Mode, particularly in large drawings, will most likely be slower in RedSDK Mode. Other operations will vary in their relative speed depending on your particular system. Loading very large drawings (tens of megabytes or larger) while in RedSDK Mode may be very, very slow, and may even fail if DesignCAD runs out of memory. Because DesignCAD is limited to 32-bit memory access functions, we recommend working only on small- to medium-sized drawings (say, under 10 MB) while in RedSDK Mode. When DesignCAD becomes available as a 64-bit program and can address a lot more memory, this limit will be eased.

If you are running DesignCAD on a fairly new desktop system with a recent NVidia or AMD graphics card, you can probably run DesignCAD in RedSDK Mode. If your system uses a graphics processor built onto the motherboard, you *may* be able to run DesignCAD in RedSDK Mode, depending on the particular graphics hardware and drivers; generally speaking, however, such built-in graphics processors (and/or the associated drivers) often have limitations that prevent them from working well with DesignCAD in RedSDK Mode.

Each time you start DesignCAD a Hardware Configuration dialog box will appear, similar to this one:
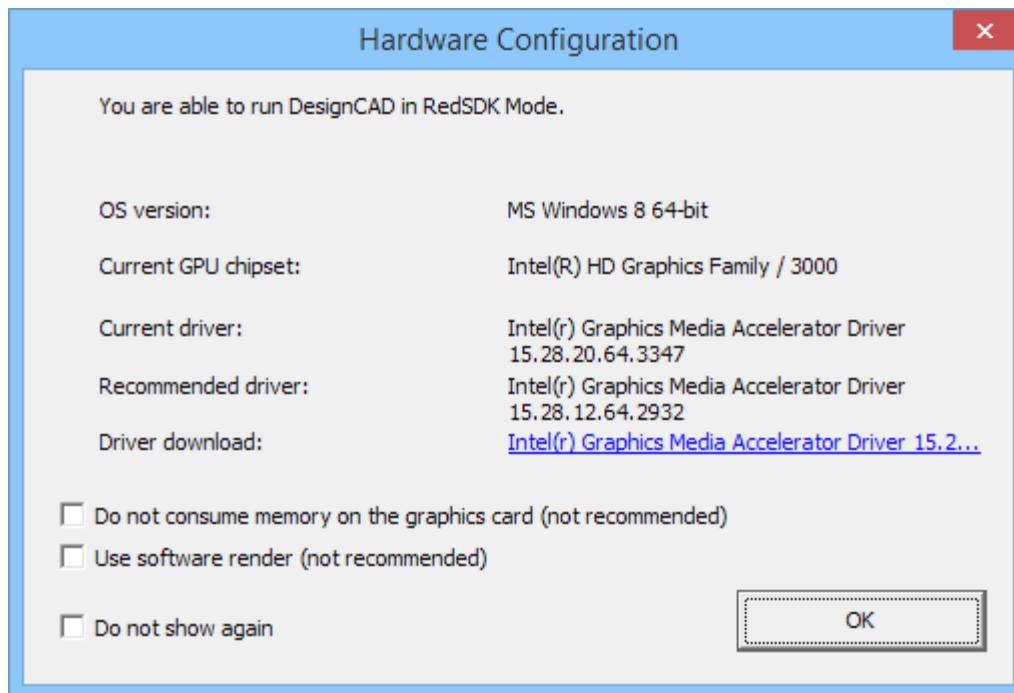
If your hardware is not supported at all by the RedSDK API, the top line will tell you so. PLEASE NOTE: Just because your hardware doesn't support RedSDK Mode, that DOES NOT MEAN that you cannot run DesignCAD. You certainly can! It should perform just fine as long as you never activate RedSDK Mode, which is off by default.

If you can't run RedSDK Mode (and it tells you so in the Hardware Configuration dialog), you can simply check the "Do not show again" checkbox to never be bothered by this message again.

If your hardware is supported, the Hardware Configuration dialog may recommend that you download a newer version of the graphics driver. Often, even if your driver is newer, you may see such a recommendation. This is, for most users, an optional step; if you are able to run DesignCAD in RedSDK Mode without any problems, changing the driver may not be necessary at all. If you do experience glitches in RedSDK Mode, sometimes switching to the recommended driver may help.

Finally, particularly for laptop systems or desktops with built-in graphics cards, some graphics hardware may be nominally supported by the RedSDK API (i.e. the Hardware configuration dialog will say "you are able to run DesignCAD in RedSDK Mode"), but might still not function well with DesignCAD in RedSDK Mode. In such a case, you may see blank views, incompletely rendered views, or other display anomalies while in RedSDK Mode. Switching to use the recommended driver may help in these cases. If after doing so you still run into serious problems in RedSDK Mode, remember that you can always disable it and run DesignCAD just fine without it.

How do I enable or disable RedSDK Mode?

- Start DesignCAD.

- Press 'Q' to open the Options dialog box.

- Activate the "General" tab.

- Click on the "RedSDK Options" button.

- Check or uncheck the box "Enable RedSDK".

- Click OK to dismiss the RedSDK Options dialog.

- DesignCAD will show you a "Restart required" dialog. Click "Yes" to restart and switch modes now, or "No" to switch modes later.

- Click OK to dismiss the Options dialog.

- At this point DesignCAD will restart (if you clicked "Yes"), and prompt you to save any changed drawings before closing.
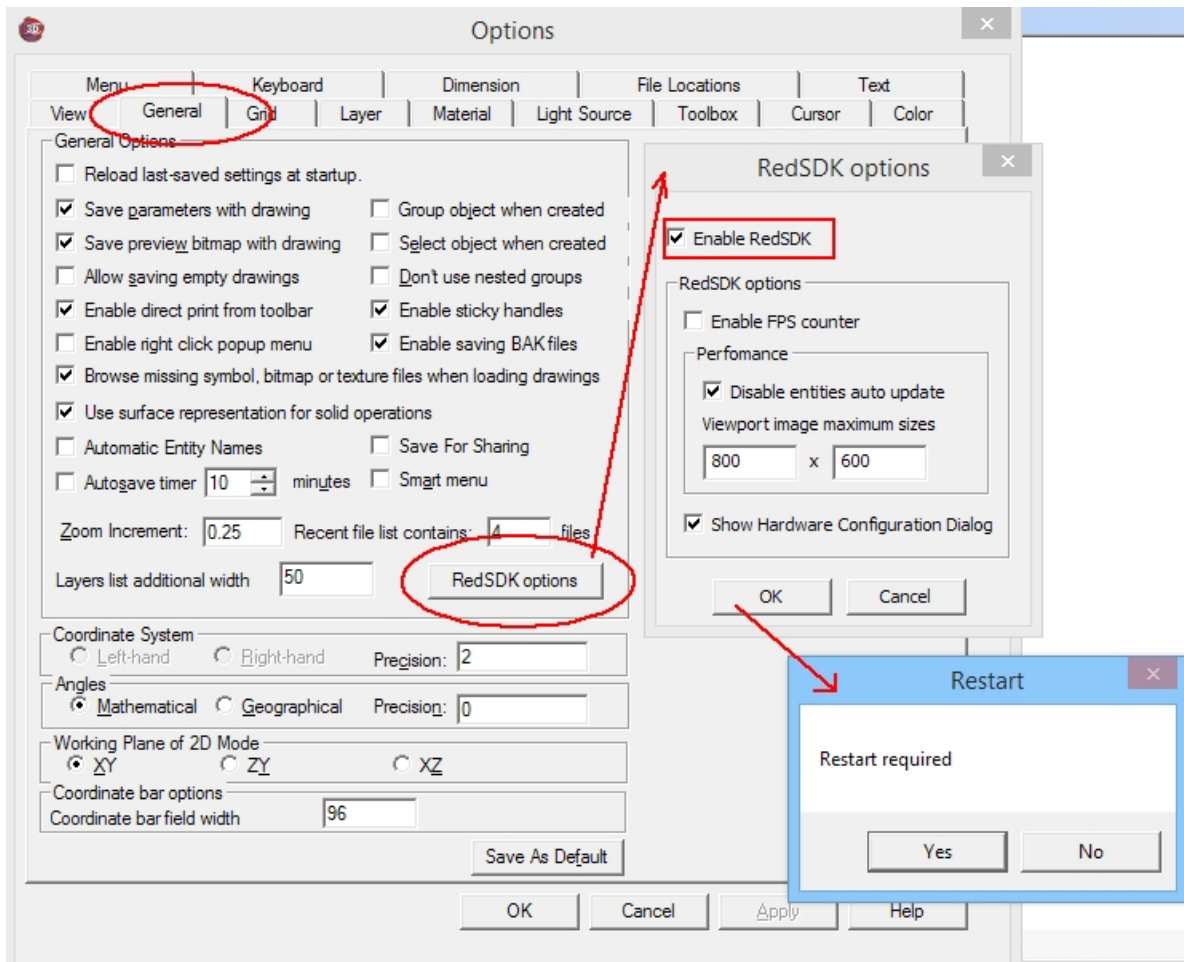
Common Problems and Solutions

WinVerifyTrust errors -- When I try to install DesignCAD, I get error 1330 (or some related error) indicating that WinVerifyTrust could not verify the signature of some file. What do I do?

Answer: This is almost always caused by a system not having up-to-date root certificates. You need to run Windows Update and install any outstanding Windows updates, particularly any that mention "root certificates". Note that the required updates may be listed as "optional" to be sure to look under that category of Windows updates.

Keeps asking for activation code -- I successfully entered the activation code, but it keeps asking for it each time I run DesignCAD. How can I get it to keep the activation code?

Answer: This problem is generally caused when you try to activate the program using a non-administrative account. Right-click on the DesignCAD icon and choose "Run as Administrator"; enter an administrator's password if Windows asks you for one, and allow DesignCAD to run. When asked for the activation code, enter it once again. Close DesignCAD and restart it by double-clicking the icon (i.e. not using "Run as Administrator"). It should now open without complaint.

A Hardware Configuration dialog says my hardware won't run DesignCAD in RedSDK Mode. Does this mean I can't use DesignCAD on this system?

Answer: You almost certainly CAN still run DesignCAD -- you just won't be able to run in RedSDK Mode. RedSDK Mode is purely optional, and off by default anyway; so long as you don't enable it, DesignCAD should work just fine. Check the "Don't show again" checkbox in the Hardware Configuration dialog to skip that message from now on.

I don't understand some of the commands, and the Help file isn't helping me. Where can I get more assistance?

Answer: A great place to start is on the DesignCAD user forums. Go to http://forum.designcadcommunity.com and register as a user. Once your registration is accepted (you'll receive an email letting you know), you'll be able to post questions and get help from some of the friendliest CAD users around.