# Shadow macro v1.2.4.0

(for DataCAD)

This is free software and there is no legal requirement for you to pay for it. But contributions towards the cost of its development and distribution are appreciated, and it is expected that you will consider a contribution if you find it useful and continue to use it.

Contributions in any multiple of $5 can be made at www.dhsoftware.com.au/contribute.htm.

## Contents

# Copyright Notice & Licence Agreement



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# Known Limitations

This software is released by the same author that produced the commercial dhShadow macro in the late1990s. Please note however, that this freeware is a totally new write, and has not necessarily been subjected to the same amount of testing prior to release as was undertaken with the previous commercial software.

The macro has been tested with DataCAD versions 10, 11 and 19. It's compatibility with earlier versions is not known (it is worth trying it with earlier versions, but it uses functionality that may not be compatible with some early versions … the Solid Fill option will not work with versions that do not support Solid Fill, but other functionality should work with these versions).

Although the author is not currently aware of any issues or limitations other than those detailed below, *your use of the macro is at your own risk*.

The following are the known limitations and issues of this software:

1. This version of the macro will cast shadows of most entity types **except DataCAD's 'smart' entities or Spirit's 'architecture' entities**.
2. Although the macro may work with Spirit, no warranty is given regarding this. In testing there were occasions when the macro exited without warning when being used with Spirit. No support is offered when using the macro with Spirit.
3. Shadows of symbols may not be reliable. Many symbols will work ok, but 'entities without area' contained in a symbol *may* not cast a shadow (by 'entities without area' I mean things which have neither a height or width such as 3D lines and curves, or 2D lines where z-base and z-height are equal).
4. The macro will only handle polygons with up to 36 sides. This was the maximum number of sides that a polygon could have prior to DataCAD version 14. If the macro encounters a polygon with more than 36 sides then the macro will fail. (There is a workaround for this – see elsewhere in this document)
5. The shadow symbol created will contain a separate outline for each entity that has a shadow cast. No attempt is made to produce an overall outline when shadows of multiple entities overlap each other. The production of an overall outline was a complex piece of logic in the dhShadow macro, and is unlikely to be replicated by the author in this freeware. (Use of the 'Solid Fill' option within this macro will produce a solid fill where the internal lines are not visible).
6. When used with DataCAD versions prior to 19.00 layer names used by the macro are restricted to 8 characters (you can still save shadows to a layer with a long name provided it is the current layer). With DataCAD version 19.00 onwards long layer names are supported, but the macro may only *display* the 8 character layer name in some circumstances (even though the shadows will be written to the correct layer with a longer name).
7. There is a limit of 32,750 entities that can have their shadows cast in a single operation.

# Quick Start Guide

1. Install and Launch the macro if you have not already done so. Select the appropriate response if you are prompted regarding which version of DataCAD you are using.
2. Select F1 North. An arrow will be shown in the bottom left corner of the drawing area indicating the current north setting. Select 2 points to define the new north direction and confirm that the arrow is updated correctly.
3. Select F2 Sun Position. From the Sun Position menu will be displayed.
   Select F3 Sun Calculator. The Sun Position Calculator will be displayed.
4. Enter Latitude, Longitude, Time Zone, Place Name and Abbreviation (a default may be displayed for Abbreviation, but overwrite it if you think there is a better abbreviation). Note that Latitude and Longitude can be entered as either degrees.minutes.seconds or as Decimal Degrees : ensure you have selected the correct input format for the entries you are making).
   *Hint: Latitude and Longitude are displayed in Decimal Degree format on Google Maps.*
   Note that a warning will be displayed if the selected time-zone differs from 'real time' for the longitude by more than 2 hours – this is not necessarily an error as there are places such as far western regions of China where the difference is up to 3 hours).
5. Using the fields in the column and row headers in the grid at the bottom of the input form, select the Date(s) and Time(s) that you wish to calculate for. (Check the Daylight Saving box for each date if applicable – it will add 1 hour to the time used for calculations)
6. Press the Calculate button and confirm that altitude and azimuth are displayed for the selected date/time combinations.
7. Press the Export to Macro button. You should now see the abbreviated place name displayed on S5 in the macro's Sun Position menu, and buttons S6 onwards allocated to the date/time combinations that you selected in the Calculator.
8. Select the required date/time setting by pressing the appropriate button ( S6 onwards). You will return to the macro main menu, but if you hover your mouse over the F2 Sun Position button you will see that it has been set to your selected location and time.
9. Select F5 Entities. The Shadow Entities menu will be displayed. Choose a selection set using one of the F1 .. F8 buttons. Press S4 Clear Set to clear the set if required.
10. Press S8 Ent Types to display the Entity Types menu. Ensure that all required entity types are enabled. Press S0 to exit back to the Shadow Entities menu.
11. Select S2 Add To Set to add entities to the selection set using the normal selection process (Entity, Group, Area, Fence etc). Entities will be highlighted as you select them (except that entity types that were disabled in the Entity Types menu will not be hightlighted). Press S0 to exit back to the Shadow Entities menu once you have selected all the required entities.
12. Press F7 Surface. The Shadow Surface menu will be displayed.
    If you want to cast shadows onto an infinite horizontal plane then select F1 Fixed Z and enter an appropriate height for your shadow plane.
    If you wish to cast shadows onto an included plane then you will need to choose a previously created polygon at the desired orientation. Select F3 Polygon and select this polygon. Confirm that the correct polygon is hightlighted and then press S0 to return to the main menu.
13. Enable the F0 Solid Fill option.
14. Select S3 Spec Clr and select the colour you would like to use for the shadows (or select S4 Curr Clr to always draw shadows using the current colour).

15. Select S5 Spec Layer and enter 'Shadows' in the input field that is displayed. This will create a new layer called 'Shadows' if one does not already exist (if you type the name of an existing layer then that will be used instead of creating a new layer). Alternatively you can select S7 Active Layer from the main menu to always create shadows on the currently active layer.
16. You are ready to create the shadow symbol! Press S8 Start. The creation process may take a little time depending on the number and nature of the entities that you selected. A message 'Processing shadows … please wait' will be displayed whilst processing, and then a message confirming how many entities had their shadows cast will be displayed once processing is complete.
17. The shadows will be created as a single symbol on your currently active layer. If you identify the symbol you will notice that it has been given a name that reflects the date/time/location as well as the actual time the symbol was created.

# Installing the macro

Simply run the ShadowInstall.exe program. This should detect the correct path to your DataCAD macro and support files folders, but please check the displayed paths before proceeding with the installation. (The exact paths may vary from computer to computer, but the macro path will normally be either a 'DCX' or 'Macros' folder located directly within your main DataCAD folder. The support files folder is normally a 'Support Files' folder located directly within your main DataCAD folder.)

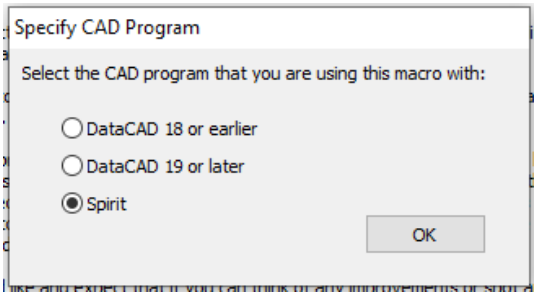
The macro creates various configuration files when you run it. If you wish to later copy it to another computer and retain any settings that you have made then you may also copy the 'dhsoftware' folder that is created in DataCAD's support files folder (copy this entire folder to the appropriate support files folder on the computer you are copying to).

Note that if you are copying the macro to a computer outside your organisation (i.e. you are giving a copy to somebody else) then the licence requires you to use the ShadowInstall.exe program and not to distribute the discreet macro files (although you may still copy the dhsoftware folder to the destination computer to copy your saved settings).

If you are copying the macro to another computer within your organisation then you may copy the discreet macro file (Shadow.dcx in the macro folder as well as the dhsoftware folder from the support files folder).

# Using the macro

## *Setting DataCAD Version (first use)*




The first time you use the macro on a particular computer, you will be prompted to accept the licence agreement and then to Specify the CAD program that you are using. It is important that you specify the program correctly (if you specify an incorrect program then the macro may crash or you may miss out on some of the macro features[1].

Updating Macro Version Information: If you answer No and then subsequently update to version 19 or greater, you can select S9 Help/About from the macro main menu. This will display a panel with information about the macro which has a Select CAD Program button at the bottom centre of the panel.

## *Defining the North Direction*

When you use the macro for the first time in a new drawing, north is defaulted to being straight up (90°). Once you have selected north in a drawing it is saved for future use and it does not need to be specified again unless you wish to change it.

Select F1 North from the macro main menu to specify a new north direction. The current north

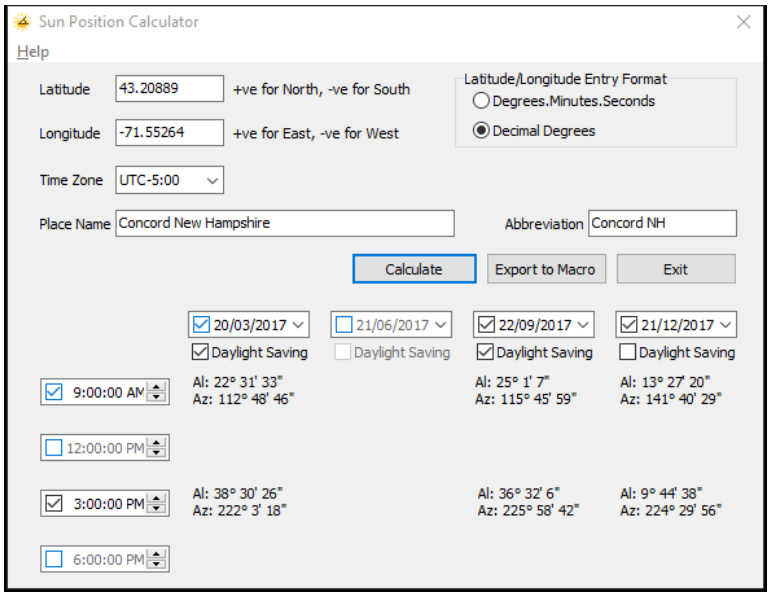
[1]From DataCAD Version 19 onwards the macro is able to determine your version. If it tries to determine your version in versions prior to 19 then it will crash. Some new functionality in the macro will be enabled from version 19.01 onwards (so although not available in 19.0, the macro can check the version, and when you update to 19.01 or greater then the new functionality will be enabled). The new functionality is the creation of a cover for the polyline shadow entities, and a more efficient way of processing polygon voids.

direction is indicated by an arrow in the bottom left corner of the screen. You will be prompted to select 2 points to define the new North direction. North is defined as being in the direction from the first point to the second point. If you wish to enter the north direction using the keyboard, then you can use relative polar input to enter the second point (just enter an arbitary non-zero distance followed by the required angle to define North).

## *Entering Azimuth and Altitude*

You should enter or calculate the altitude and azimuth before you cast shadows. If these values have not been set then the sun may default to a position directly overhead.

To set the altitude and azimuth, first select F2 Sun Position from the main menu.




It is recommended that you use the included Sun Position Calculator to enter the required altitude and azimuth. To do this, select F3 Sun Calculator from the Sun Position Menu. The Sun Position Calculator (shown at left) will be displayed.

Enter required details in the Calculator, taking care that your longitude and latitude entries match the selected Entry Format. (Note that Google Maps displays the longitude and latitude in decimal degrees at the top of the right-click menu, so select that option if you are copying longitude and latitude from Google).

A warning will display if the selected time zone differs by more than 2 hours from the 'real time' for the selected longitude. Most places fall within this 2 hour tolerance, but there are some places (such as far western China) where the difference if validly more than 2 hours (so disregard the warning if appropriate, but you may wish to adjust the default calculation times if there is a big difference between standard time and the real time).

Note that when you enter the Place Name a default value will be set for the abbreviation, but you should check that it is suitable and change it if required (The entered abbreviation is used as part of a function key label when the values are exported back to the macro).

If you require to calculate for more than one date or time then you can tick the checkboxes in several of the date and/or time fields as required.

Once you have entered the required details press Calculate button and the calculation results will be displayed for the selected dates/times (note that 'sun too low' will be displayed if the altitude is less than 1 degree).

Once the calculations have been done you have several options:

- If you just wish to use a single date/time then double click on the displayed result to transfer it to the macro (the calculator will automatically close)
- Pressing the Export To Macro button will create saved macro entries for all of the calculated items, and will also set the filter so that these saved values are displayed in the macro. The calculator will close once the values have been exported.

- If you single click on one of the saved entries, then that value will be transferred to the macro (but the calculator will not close). You may wish to do this so select a particular value prior to using the Export option (which creates saved entries for the macro, but does not actually select one of them).

Note: You *must* exit the Sun Position Calculator before you return to DataCAD (if the calculator is still running you will not be able to do anything in DataCAD).

If you do not wish to use the calculator then you can enter altitude and azimuth manually by selecting the F1 Enter Position option on the Sun Position menu. Enter these values using your normal DataCAD format for angles. The entered values can be saved for future use (see below).

Once you have entered the altitude and azimuth (whether manually or by using the calculator) their values will be stored as part of the drawing file.

You will need to enter new values to cast shadows for a different date or time. To do so, simply repeat the above procedure.

## *Saving Azimuth and Altitude*

If you use the Sun Position Calculator then the altitude and azimuth can be automatically saved. *The details that follow are for where you have entered then manually:*

Select F3 Save from the Sun Position menu.

You will be prompted to enter 2 strings to describe the angles you are saving:

Function Key Label

Enter a short string to describe the saved azimuth/altitude. This string will be used as a function key label, so it needs to be kept fairly short (max length allowed is 24 characters, but be aware that strings longer than 14 or 15 characters are likely to be truncated on the function key label). Longer labels can be useful when used in conjunction with the Filter functionality. This label is also used as part of the shadow symbol name, and to construct a file name, so you cannot use characters that would not be allowed in a file name.

Subject to the above limitations, you can enter anything you like as the function key label. A suggested format would be to start with date and time info followed by the location or client name or job number etc. You can then filter by location/client/job and the date/time should still display on the function key (and the filter is displayed on the filter key – see below)

If you enter a value that is the same as a function key label that you have saved previously then the previous values will be overwritten.

Description

A default value will be provided for this field, but you can enter anything you like to more fully describe the sun position being saved. The value entered here will be displayed when you hover the mouse over the function key when retrieving the saved values (if the string you enter is too long then it may be truncated when displayed, so keep it reasonably concise).

Once you have saved, the function key labels for the saved items are displayed in the Sun Position menu as items F6 through S9. You can save as many different settings as you want, but obviously if you save more than 14 items they will not all fit in this range on the menu, and this is where the filter functionality comes in useful:

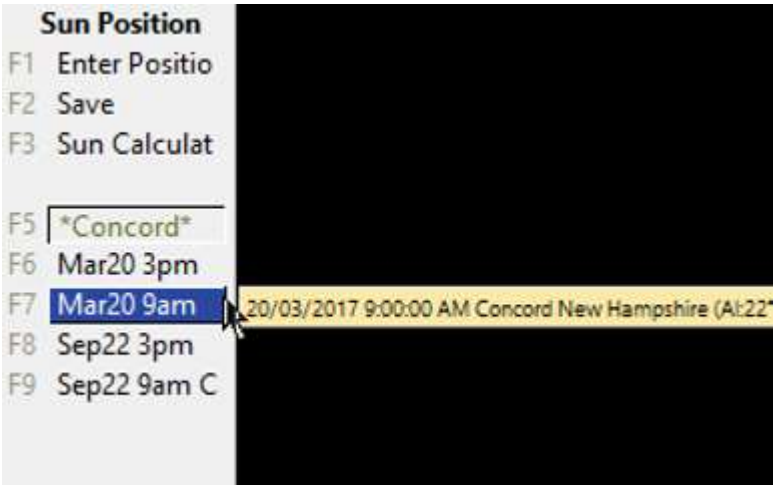
Filter

The filter command is available at F5 on the Sun Position menu, and is applicable whether the

values have been entered manually or via the Sun Position Calculator (although note that the filter can be automatically set by the calculator if you pressed the Export to Macro button).

The F5 Filter button is a toggle. If it is disabled then no filter is applied and the first 14 saved sun positions will be displayed. If you select F5 then you will be prompted to enter a filter string and filtering will be enabled. Select F5 again and filtering will be disabled. *If filtering is enabled then the actual filter is displayed on the F5 key label.*

Filtering is performed on the function key label which includes the Date, Time and Place Name Abbreviation (although that is generally truncated on the display itself).




For example, if you save settings for different date/times at a location abbreviated to 'Concord NH' then possible filters would be '*NH', '*Concord*' or '*Concord NH'. (depending if you had other locations ending in 'NH' or containing 'Concord' etc). In this way you can access up to 14 of the relevant saved settings. Even though the function key labels are truncated, it is obvious which location they refer to from the display of the filter on F5.

The asterisk (*) and question mark (?) wildcards can be included in the filter.

## *Retrieving Saved Azimuth and Altitude*

As noted in the previous section, the saved sun positions are displayed on function keys F6 through S9 (up to 14 settings, and subject to the applied filter as described above).

Simply select the appropriate function key to set the associated azimuth and altitude.

## *Technical Stuff Regarding Saved Values*

Saved altitude/azimuth settings are saved in a Shad subfolder within the DataCAD (or Spirit) Macro folder. Any such saved settings can be accessed from any drawing (i.e. they are not drawing specfic).

There is no way to remove unwanted saved settings from within the DataCAD macro, but you can remove them by deleting the appropriate files from this folder.

If you want to copy your saved settings to a different computer then you can copy this folder (or a subset of files from it if desired). This folder contains a discrete file for each set of saved settings. These files are named for the Function Key Label that you entered ,with a .sun extension. The files contain 4 lines with the following information:

Function Key Label
Description
Azimuth (in radians)
Altitude (in radians).

As these are text files you can view them in a text editor. Note however that the azimuth and altitude are in radians in this file. Manual editing, although possible, is *not* recommended.

## *Selecting Shadow Surface*

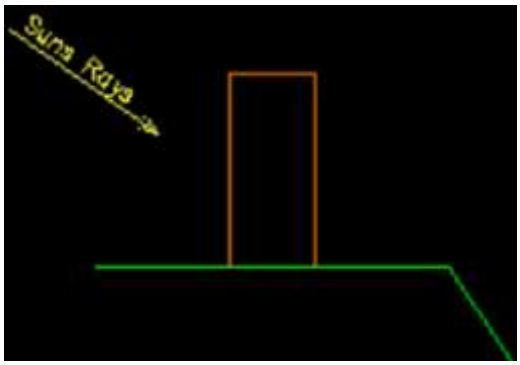
To define the shadow surface you can select either a horizontal plane at a specified z height, or a single polygon at any orientation. If you select a single polygon then you can either use it to define an infinite plane at that orientation, or else choose to have the shadows trimmed to be within the polygon only.

The Shadow Surface menu is invoked by selecting the F7 Surface option from the main menu.

If you select F1 Fixed Z then you will be prompted to enter a z height. The shadow surface will then be defined as an infinite horizontal plane at the specified height.

If you select the F3 Polygon option then you will be prompted to select a polygon from the drawing to define the shadow surface. You can select a polygon which is at any orientation (horizontal, vertical, or anywhere between). The polygon that you select must have no more than 36 sides (if you select a polygon with more than 40 sides then it is likely to crash the drawing)

The F4 Top Only option will appear if you are selecting a polygon. This is applicable to non-vertical polygons only: If it is toggled ON then shadows will only be cast onto the upper surface of a polygon; if it is toggled OFF then shadows may be cast onto either surface of the polygon.
As an example, if this was toggled OFF then shadows would be cast onto the underside of the inclined green surface by the brown object in the diagram at right (if Top Only was toggled ON then no shadows would be cast on the inclined green surface).




When you wish to cast shadows onto a different plane, simply return to the Shadow Surface menu and make a new selection.

The surface option selected is saved in the drawing file so that it will automatically be selected when you next use the macro in the same drawing.

## *Trimming the Shadow to the Surface Entity*

If you selected a polygon to define the shadow surface then the F8 Trim Shadow option will appear on the main menu;

If this option is toggled OFF then the polygon will be taken to define an infinite plane and shadows will be drawn even if they extend beyond the edges of the polygon.

If this option is toggled ON then only the portions on the shadow that fall within the bounds of the surface polygon will be drawn.

(If you specified a fixed z height to define a horizontal plane for the shadow surface then the surface is considered to extend infinitely in all directions and this option is not available.)

## *Selecting the Entities to cast shadows of*

The macro uses a selection set to define the entities that are to have their shadows cast. You can use DataCAD's normal Selection Set functionality to add/remove appropriate entities to a selections set prior to invoking the macro, or you can add/remove entities from within the macro as set out below. In either case, be aware of the following limitations:

- Processing can be limited to a subset of entity types using the S8 Ent Types option on the Shadow Entities menu. Only suitable entities will be highlighted by the macro.

  IMPORTANT: DataCAD versions 14 and above can create polygons with more than 36 sides. The macro will not handle these large polygons correctly (and in the worst case may crash if it tries to process one). There is a workaround for this: Saving your drawing as a previous version (prior to 14) will split these large polygons into smaller ones and you will be able to use the macro on the resulting version of the drawing file.

- If you have selected to cast shadows of 2D lines, then all 2D line types will be included (including non-associative hatch and dimensions). Remove unwanted lines from your selection set if necessary.

- shadows may sometimes not be cast for any entities that are on locked layers. This appears to be a bug in DataCAD itself, but to avoid the problem it is recommended that you avoid selecting entities that are on a locked layer for shadow casting.

- Processing will stop after casting shadows of 32,750 entities. If your selection set contains more suitable entities than this then some entities may not have their shadows cast (a warning message will be displayed after creating shadows in this case).
  Selecting an excessive number of entities is not recommended as the processing of the shadows may take several minutes (it should still work, but you will need to be patient).

To define a selection set, or to select an existing set to use, select F5 Entities from the macro's main menu to invoke the Shadow Entites menu.

The Shadow Entities menu displays the available sets on the function keys F1 to F8. If existing suitable entities have been selected then they will be highlighted[2] when you invoke the menu, and the button relating to the selected set will be enabled.

If the required entities have already been added to a selection set then simply choose the required set by pressing the corresponding function key.

If the required entities have not already been added to a set, select the function key corresponding to a set (choose one that is not already in use for something else) and then use the S2 Add To Set, S3 Del Frm Set, and S4 Clear Set options to add/remove required items to/from the set. As you add (or remove) entites from the set then they will be highlighted (or unhighligted) on the display (note that highlighting can be disabled [see footnote], and that only eligible entity types are highlighted - you can change the eligible entity types using the S8 Ent Types option from the Shadow Entities menu).

The S5 Rename option on this menu allows you to rename the selected set with a new name up to 8 characters long.

Once you have selected a selection set to use, that selection set number is saved in the drawing file so that it is automatically used next time you invoke the macro in the same drawing.

Note that the shadow generation process for some entity types can be time consuming. Typically curved 3D entity types will take a lot longer than entities with straight edges.

## *Showing Your Selections*

The entities you chose to cast shadows of (and the shadow surface if you selected a polygon) would

[2] Highlighting can be disabled in the Highlight Settings menu (select F6 Hilite from the main menu). Disabling is not recommended, but may be useful to reduce the screen drawing time if you have selected a large number of complex entities.

have been highlighted as you selected them (providing highlighting has not been disabled).

You can also choose to highlight the already selected entities as well as change the highlighting method by selecting F6 Hilite from the main menu.

To highlight already selected entities choose F6 Hilite from the main menu followed by F8 Show Entities or S8 Show Surface from the Hilite Settings menu to show either the shadow entities or the surface respectively (Note that if you have selected a Fixed Z shadow surface then the shadow surface cannot be highlighted).

The Hilite Settings menu also allows you to modify the way that entities are highlighted, or to disable higlighting altogether (highlighting may take several seconds if you have selected a large number of complex entities to cast shadows of and it may be convenient to disable higlighting of these once they are selected – highlighting of the surface can also be disabled but there is no compelling reason to do so).

Select F2 Colour or S2 Colour to specify the colour used to highlight the shadow entities or surface respectively.

Select F3 Increased Wgt or S3 Increased Wgt to specify if increased line weight should used to highlight the shadow entities or surface respectively. If these options are enabled then the line weight will be increased by one to display the respective highlight.

Select F4 Solid Lines or S4 Solid Lines to specify that solid lines should be used to highlight the shadow entities or surface respectively. Select F5 Dashed Lines or S5 Dashed Lines to specify that dashed lines should be used.

If dashed lines are used then you can select the line spacing (in terms of pixels) using the F6 Line Spacing or S6 Line Spacing for the shadow entities or surface respectively.

# *Shadow Options*

## *Specifying the Colour for Created Shadows*

You can specify the colour that will be used for drawing shadow lines by selecting one of the following options from the main menu:

S3 Spec Clr
Use this option to specify a fixed colour that will be used to draw all shadow entities.

S4 Curr Clr
This option will cause the shadows to be drawn in the current colour for the layer that they are being created on (not necessarily the current layer).

## *Specifying the Layer for Created Shadows*

The S5 Spec Layer button on the main menu is used to specify a layer on which the shadows will be drawn. Select S6 Active Layer to always draw shadows on the currently active layer.

When you select S5 Spec Layer, you are prompted to enter a new or existing layer name. You may select F1 Lyr Menu to select from a list of existing layers on the function keys (but must select an existing layer and cannot create a new layer once F1 is pressed).

For DataCAD versions prior to DataCAD 19: If you do not use the F1 option (i.e. you key in the layer name) the macro will only allow you to enter an 8 character layer name. That name must match an existing layer exactly in order to select an existing layer. If you wish to select a layer

with more than 8 characters in its name then you should use the F1 option for these versions of DataCAD. This is a limitation of DCAL (the programming language for DataCAD macros) that remains from the days when layer names could only be 8 characters.

In DataCAD versions 19.0 onwards you can enter a long layer name without using the F1 option.

In either case (pre or post 19.0) if you use the F1 option then the macro will only display the 8 character name after you select it (even though the shadows will be created on the correct layer with a long name).

### *Solid Fill*

The macro can solid fill the created shadows. The F0 Solid Fill option is on the main menu. Toggle it on to have shadows created with solid fill.

### *Wireframe Shadows*

If the Solid Fill option is not enabled then the shadows will appear as a 'wire frame' (although they will still render as a solid surface in O2C if you are using DataCAD 19.01 or later and select the Cover option shown below).

### *Cover*

*This option is only available if you are using DataCAD version 19.01 or greater.* It effects whether the shadow will be rendered (e.g. in the Object Viewer or Quick Shader).

The S0 Cover option on the main menu is used to select whether to create a cover on the polyline shadow. If it is toggled on then the shadow will have a cover (and will render as a solid surface). If it is toggled off then the shadow will not have a cover (and will not render).

### *Symbols*

If this option is enabled then shadow entities will be contained in a symbol which will be given a name that indicates the sun position that it represents (either the Function Key Label entered when saving a sun position, or the actual azimuth and altitude angles) together with a date and time stamp indicating when the symbol was created.

If S2 Symbols is disalbled the shadows will be created as discreet polylines.

## *Creating the Shadows*

Ensure you have correctly defined North, enter the correct azimuth and altitude, and specify a suitable shadow surface before you select S8 Start on the main menu to generate the shadows. Obviously you must also have chosen some entities to have their shadows cast.

The shadows will be drawn either as a Symbol or as discreet polygon entities (depending on the Symbol option detailed above.

If you have DataCAD version 19.01 or greater then the polylines in the symbol will have a cover. This allows them to show up when you render them in O2C or the quickshader etc. (The polylines will not have a cover and cannot be rendered if you have a DataCAD version prior to 19.01).

Note that you may not be able to explode the created symbol, but you can manually trace around it to create an outline if required. In order to snap to the points in the symbol you may need to disable the 'Fast Symbol' setting in DataCAD (Utility Menu/S3 Object Snap/S6 More Options/F1 Fast

Symbol).

Note that some entity types will take a lot longer in the shadow generation process than other types. Typically 3D entities with curved sides will take a lot longer than entities with straight sides. A message 'Processing shadows … please wait' will be displayed whilst the shadows are being processed.

### *Sun-Eye View*

The F3 Sun-eye View option on the macro's main menu will change the view to a parallel view as seen from the specified sun position, with the shadow entities in the centre of the view.

When the view is invoked any surface and shadow entities will be highlighted (provided highlighting is not disabled). This can be useful to visualising where the shadows will be cast without actually creating any shadows.

Press the Esc key to remove the highlighting, or F6 Hilite/F8 Show Entities to re-show entity highlighting whilst viewing the sun-eye view. You can also change the highlight settings whilst in the sun-eye view (access the highlight settings unsing F6 Hilite from the main menu, and you can then change higlight colour, weight and line type as appropriate before redisplaying the highlight with the new settings using F8 Show Entities)

When you select this option, a view is saved to the drawing file with a view name of 'Suns-Eye'. The view can then also be viewed outside the macro (using the GoTo View option in DataCAD's Utility menu).

## Viewing this document from the Macro

Pressing S9 Help / About from the macro main menu will display an information box about the macro. This information box includes a 'Show Instruction Manual' button which you can click to view this instruction manual.

## What's new in this version

The following changes have been made since the 1.1 version of the macro:

- You can now select a shadow surface in any view (previously it forced you to plan view when selecting the surface)
- Some minor changes to the layer menu (you can now cancel out of the menu without making a selection).
- Fixes to the saving of the selected layer (this setting was previously lost between uses of the macro in some circumstances).
- All messages and function key labels are now stored in separate files (making translation to other languages easy)
- The macro now sets the colour of created symbols so that correct shadow colour is retained if the symbol is exploded (previously the colour of the entities in the symbol was set, but that colour setting was lost if the symbol was exploded)

The following changes have been made since the 1.2.00 version of the macro:

- Fixed display scaling problems that could occur on hi-res monitors
- Added the option to create shadows as discreet entities as an alternative to the default symbol creation.

- Made compatible with STI Spirit (but still not reliable, and with some reduction in functionality).
- A warning is displayed if the time-zone selected in the Sun Position Calculator differs from ‘real’ time for the longitude by more than 2 hours
- Change the way the default Place Name Abbreviation is calculated in the Sun Position Calculator (and do not overwrite the existing Abbreviation unless the Place Name has been changed).